

FIFTY-FIRST ANNUAL REPORT
OF THE
DEPARTMENT OF MARINE
AND FISHERIES

FOR THE
FISCAL YEAR 1917-18

MARINE

PRINTED BY ORDER OF PARLIAMENT.



OTTAWA
J. DE LABROQUERIE TACHÉ
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918

*To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc.,
Governor General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit herewith, for the information of Your Excellency and the Parliament of Canada, the Fifty-first Annual Report of the Department of Marine and Fisheries, Marine Branch.

I have the honour to be,

Your Excellency's most obedient servant,

C. C. BALLANTYNE,
Minister of Marine and Fisheries.

DEPARTMENT OF MARINE,

OTTAWA, October, 1918.

TABLE OF CONTENTS

REPORT SUBMITTED BY MINISTER.

REPORT OF DEPUTY MINISTER. Subjects paged in summary below.

A

	PAGE.
Arrivals, British, weekly from April 1, 1917, to April 1, 1918...	9-10
Allied and neutral shipping, losses and building from August, 1914, to January, 1918...	11
Allied shipping, losses and building from August, 1914, to January, 1918...	12
American shipping, output for 1918...	12
American assembling yards...	13
" new yards...	12
American tonnage under contract and afloat...	13
American workmen, training of...	14
Australia, purchase of steamers...	15
Appropriation, 1917-18...	28
Agencies—Abstracts of Annual Reports of—Halifax agency...	94
" " " Sydney, N.S., sub-agency...	94
" " " Pictou, N.S., sub-agency...	94
" " " St. John, N.B., agency...	95
" " " Charlottetown, P.E.I., agency...	95
" " " Montreal, P.Q., agency...	95
" " " Quebec, P.Q., agency...	95
" " " Prescott Depot, Ont., agency...	96
" " " Fort William, Ont., sub-agency...	96
" " " Kenora, Ont., sub-agency...	96
" " " Victoria, B.C., agency...	97
" " " Prince Rupert, B.C., sub-agency...	97

B

British American Shipbuilding Company, Limited...	15-20
British weekly sinkings and arrivals, from April 1, 1917, to April 1, 1918...	9-10
British sinkings, monthly tonnage, chart of...	10
Balance unexpended on appropriation, 1917-18...	28
Belleville, Ont., Harbour Commissioners, report of...	103
British Columbia Salvage Company, Limited, report of...	107

C

Chart, monthly tonnage of British sinkings...	10
Canada and sea transport...	14
Canadian Government shipbuilding programme...	14-16
Canadian Vickers, Limited...	15-19
Canadian Allis Chalmers, Limited...	15-20
Collingwood Shipbuilding Company, Limited...	15-22
Coughlan & Sons, Limited...	15-21
Canadian Marine, personnel...	17-18
Canadian Shipbuilding disabilities...	18
Canadian Shipbuilding plants, operations of...	19-22
Cameron Genoa Mills, Limited...	21
Canadian shipping, statistics of...	23
Canada, statement of number of vessels and number of tons on registry books on December 31, 1917...	24-25
Canada, comparative statement of number of vessels and number of tons on registry books on December 31, from 1908 to 1917, inclusive...	26
Canada, comparative statement of new vessels built and registered in the Dominion of Canada and their net tonnage during the year ended December 31, in each year from 1908 to 1917, both inclusive...	27
Contracts for Canadian Government vessels...	15
Canadian ships, standardizing of...	16
Canadian wooden shipbuilding plants...	22
Canada, statement showing the number of vessels removed from registry during 1917...	28
Correspondence, Marine Department...	28

C

	PAGE.
Chief Engineer's Report on office work..	29
" " publications..	29
" " personal inspections..	29
" " removal of obstructions..	30
" " maintenance and repairs to wharves..	30
" " icebreaking..	30
" " new aids to navigation, etc., in—	
" " Nova Scotia..	31
" " New Brunswick..	32
" " Prince Edward Island..	32-33
" " Quebec..	33
" " Montreal agency..	33-34
" " Ontario..	34
" " British Columbia..	35
" " recapitulation of expenditure..	35
Commissioner of Lights' Report—	
" " Statement by districts showing the number of lights of the several orders, lightships, lightboats, light- keepers, fog signals, buoys, submarine bells, etc.	36
" " Statement of unlighted aids to navigation maintained in—	
New Brunswick district..	37
Nova Scotia district..	37-39
Prince Edward Island district..	39
Quebec district..	39-40
Montreal district..	40
Prescott district..	40
Parry Sound district..	40
Kenora district..	41
Manitoba district..	41
British Columbia district..	41
Charlottetown Agency—Abstract of Report..	95

D

Davie Shipbuilding and Repairing Company..	15-22
Dominion Shipbuilding Company..	22
Disabilities, Canadian Shipbuilding..	18

E

Expenditure and Revenue, 1917-18..	28-56-57
--	----------

F

Firms, Canadian Shipbuilding..	15
--	----

G

Grants to seaman's institutes..	70
---	----

H

Halifax Agency—Abstract of Report..	94
Harbour Commissioners, Report of, Montreal, P.Q..	98-100
" " " Three Rivers, P.Q..	100-102
" " " Pictou, N.S..	102-103
" " " Belleville, Ont..	103
" " " Toronto, Ont..	104
" " " Vancouver, B.C..	105
" " " Quebec, P.Q..	105-106

I

Insurance rates and St. Lawrence route..	18
Inspection, Steamboat..	28

J

Japanese Shipbuilding Programme..	14
---	----

SESSIONAL PAPER No. 21

K

	PAGE.
Kingston Shipbuilding Company..	22

M

Midland Shipbuilding Company, Limited..	15-19
Merits, Canadian Shipbuilding Plans..	16
Meteorological Service—Report of Director..	58
“ “ Quebec Observatory..	64
“ “ St. John, N.B. Observatory..	64-65
“ “ Victoria, B.C., Observatory..	65-67
Marine Hospital Service—Report of Medical Superintendent..	68-70
Masters and Seamen Branch—Report of Officer in Charge..	92
“ “ “ Pilotage..	92
Montreal Agency—Abstract of Report..	95
Montreal Harbour Commissioners' Report..	98-100

N

New Yards, American..	12
Nova Scotia Steel Company, Limited..	15-22
Navigation, Season of..	28

O

Operations of Canadian Shipbuilding Plants..	19-22
--	-------

P

Port Arthur Shipbuilding Company..	15-20
Personnel, Canadian Marine..	17-18
Polson Iron Works, Limited..	15-22
Pilotage—Report of Officer in Charge..	92
Pictou, N.S., sub-agency—Abstract of Report..	94
Prescott Depot—Abstract of Report..	96
Pictou, N.S., Harbour Commissioners' Report..	102-103
Port Wardens' Reports..	107

Q

Quebec Salvage and Wrecking Company, Report of..	107
--	-----

R

Revenue and Expenditure, 1917-18..	28-56-57
Record of Shipping, Halifax Citadel..	93
Reports of Subsidized Wrecking Companies..	107
Returns of Shipping Masters for year ending December 31, 1917..	108

S

Shipping—American output for 1918..	12
“ Allied and neutral losses and building from August, 1914, to January 1, 1918..	11
“ Allied losses and building from August 1914, to January 1, 1918..	12
Shipbuilding—Japanese Programme for 1918..	14
“ Canadian Government Programme..	14-16
“ Wooden Plants in Canada..	22
Sea Transport and Canada..	14
Statistics of Canadian Shipping..	21
Statement of number of Canadian vessels and tons on registry books on December 31, 1917..	24-25
Statement, comparative, of Canadian vessels and tons on registry books on December, 31, from 1908 to 1917, inclusive..	26
Statement, comparative, of new vessels built and registered in the Dominion of Canada and their net tonnage during the year ended December 31, in each year from 1908 to 1917, both inclusive..	27
Statement Canadian vessels removed from registry during year ended December 31, 1917..	28
Standardizing Canadian Ships..	16
St. Lawrence River insurance rates..	18
Season of Navigation..	28

S

	PAGE.
Steamboat Inspection..	28
St. Lawrence River Ship Channel—Report of Superintending Engineer.. . . .	42
“ “ General information	42
“ “ Division 1 (Montreal to Sorel).. . . .	42-43
“ “ “ 2 (Sorel to Batiscan).. . . .	43
“ “ “ 3 (Lake St. Peter).. . . .	43
“ “ “ 4 (Batiscan to Quebec).. . . .	44
“ “ “ 5 (Quebec to the Traverse).. . . .	44
“ “ Accidents in 1917.. . . .	44-45
“ “ Marine Signal Service.. . . .	45-46
“ “ Icebreaking, 1917-18.. . . .	47
“ “ Average monthly depth in 27½-foot channel.. . . .	47
“ “ Average monthly depth in 30-foot channel.. . . .	47
“ “ Cost of Ship Channel to date.. . . .	48
“ “ Progress of dredging operations, 30-foot project.. . . .	48-49
“ “ Progress of dredging operations, 35-foot project.. . . .	50-51
“ “ Abstract of work of dredging fleet, 1917-18.. . . .	52-53
Sorel Shipyard—Report of Superintendent.. . . .	54-55
“ “ New construction.. . . .	54
“ “ Buoys.. . . .	55
“ “ General.. . . .	55
Signal Station, Halifax Citadel—Record of Shipping.. . . .	93
Sable Island—Report of Superintendent.. . . .	93
St. John, N.B., Agency—Abstract of Report.. . . .	95
Sydney, N.S., Sub-agency—Abstract of Report.. . . .	94

T

Tonnage, American, under contract and afloat.. . . .	13
Training of American workmen.. . . .	14
Thor Iron Works, Limited.. . . .	15
Tidewater Shipbuilding Company.. . . .	15-22
Toronto Harbour Commissioners' Report.. . . .	104
Three Rivers Harbour Commissioners' Report	100-102

V

Victoria, B.C., Agency—Abstract of Report	97
Vancouver, B.C., Harbour Commissioners' Report.. . . .	105

W

Wallace Shipyards, Limited.. . . .	15-21
Western Canada Shipyards, Limited.. . . .	20
Wrecks and Casualties—Report of Wreck Commissioner.. . . .	71
“ “ Statement of investigations into.. . . .	71-75
“ “ Statement of coasting and sea-going wrecks.. . . .	76-89
“ “ Statement of inland waters wrecks.. . . .	90-91

Y

Yards, American assembling.. . . .	13
Yarrows, Limited, Esquimalt, B.C.. . . .	20

REPORT

OF THE

DEPUTY MINISTER OF MARINE AND FISHERIES

To the Hon. C. C. BALLANTYNE,
Minister of Marine and Fisheries.

SIR,—I have the honour to submit herewith my report for the fiscal year ending March 31, 1918.

As was the case last year, and possibly even to a greater extent, the question of supreme moment not only in the shipping world but in the world at large is the relation of ship building to ship sinking, for on this may hinge the issue of the war.

A part of this report will accordingly be devoted to ship losses by submarine and mine, the production of ships generally in Great Britain and the United States to offset these losses, and a detailed account of the part Canada proposes to take in the building of ships to supply much-needed sea transport for the Empire during the war, and to provide adequate means for carrying her own commodities overseas, in the period of reconstruction that will follow.

WEEKLY British Sinkings, Sailings and Arrivals from April 1, 1917, to April 1, 1918.

Week ended.	Over 1,600 tons.	Under 1,600 tons.	Sailings and Arrivals.
April 8.....	17		4,773
" 15.....	19	9	4,710
" 22.....	40	15	5,206
" 29.....	38	13	5,406
May 6.....	24	22	4,873
" 13.....	18	5	5,120
" 20.....	18	9	5,423
" 27.....	18	1	5,487
June 3.....	15	3	5,335
" 10.....	22	10	5,589
" 17.....	27	5	5,890
" 24.....	21	7	5,799
July 1.....	15	5	5,591
" 8.....	14	3	5,696
" 15.....	14	4	5,748
" 22.....	21	3	5,582
" 29.....	18	3	5,523
August 5.....	21	2	5,469
" 12.....	14	2	5,442
" 19.....	15	3	5,602
" 26.....	18	5	5,309
September 2.....	20	3	4,816
" 9.....	12	6	5,612
" 16.....	8	20	5,432
" 23.....	1	2	5,466

SESSIONAL PAPER No. 21

The months of February and March, 1917, have been included in this chart for the reason that in February, 1917, the German toll of British ships reached its maximum, approximately 825,000 tons, and very nearly fulfilled the boast of the German Admiralty to sink 1,000,000 tons of British shipping monthly. During this month very possibly 1,000,000 tons of allied shipping were sunk.

The sharp up-and-down curve of this chart for some months is very marked; March drops to 600,000 tons, April rises to nearly 800,000 tons, May drops to 500,000 tons, June rises to 750,000 tons, July drops to 475,000 tons, August rises to 600,000 tons, and then from September, 1917, to April, 1918, the curve is much flatter, the sinkings for these months averaging about 450,000 tons, and never exceeding 500,000 tons.

If the sinkings for the seven months from February to August, 1917, are compared with the sinkings for the seven succeeding months, September to December, 1917, and January to April, 1918, it will be seen at once that the British losses by German submarine and mine have been cut down by about one-half, and this is not the only encouraging feature, for in the last seven months up to April, 1918, twice as many German submarines were sunk as in the previous seven, according to a diagram of "submarines sunk" issued by the British Admiralty.

LOSSES AND BUILDING OF ALLIED AND NEUTRAL SHIPPING FROM AUGUST, 1914, TO JANUARY 1, 1918.

The figures are taken from the *New York Journal of Commerce*.

Japan is excluded from the estimate, as her ships are not operating in the war zone to any extent.

Total tonnage of allied and neutral countries on August 4, 1914 (date of British declaration of war), 42,000,000.

Losses by mine and submarine, 9,500,000 tons; other marine casualties, 1,275,000 tons; total casualties, 10,775,000 tons; leaving a balance of pre-war tonnage still afloat on January 1, 1918, of 31,225,000 tons.

Shipping built and afloat from commencement of war to January 1, 1918:—

	Tons.
Great Britain, 1915..	668,000
" " 1916..	538,000
" " 1917 (estimated)..	1,400,000
Total..	2,606,000
United States, 1915..	141,864
" " 1916..	237,836
" " 1917 (estimated)..	1,000,000
Total..	1,379,700
Other construction..	500,000
Total construction allied and neutral shipping..	4,485,000
Pre-war tonnage still afloat on January 1, 1918..	31,225,000
Total tonnage afloat on January 1, 1918..	35,710,000

As the total tonnage in August, 1914, was 42,000,000, the decrease is 6,290,000 tons.

LOSSES AND BUILDING OF ALLIED SHIPPING FROM AUGUST, 1914, TO JANUARY 1, 1918.

Allied shipping in August, 1914, in round numbers:—

	Tons.
Great Britain..	20,000,000
France..	2,300,000
Italy..	1,700,000
United States..	8,000,000
Total..	32,000,000

Losses from all sources since beginning of war up to January 1, 1918, 9,500,000 tons, leaving a balance of pre-war tonnage still afloat of 22,500,000 tons.

Constructed by United States and Great Britain and now afloat, and enemy vessels (ocean-going) commandeered, 2,400,000 tons; tonnage afloat on January 1, 1918, 24,900,000 tons; decrease since August, 1914, of 7,100,000 tons.

To keep pace with the growing population and commerce of a maritime country, it is computed that its tonnage should be increased by about 5 per cent annually; that is, allied tonnage on January 1, 1918, to meet ordinary peace requirements should have totalled 38,400,000 tons, so that the shortage of tonnage to properly carry on transportation in peace time amounts to 13,500,000 tons, and the strain of war transport is greater.

The crowning need of an increased output of ships is apparent.

During the months of January, February, and March the allied losses in dead-weight tonnage were approximately as follows: January, 425,000 tons; February, 450,000 tons; March, 475,000 tons; total, 1,350,000 tons.

Completed shipping (not vessels launched) turned out by British yards during the months of January, February, and March: January, 83,382 tons deadweight; February, 150,057; March, 242,511; total output for the three months, 475,950 tons.

Completed shipping (not vessels launched) turned out by American yards during the months of January, February, and March: January, 79,541 tons; February, 120,700; March, 166,700; total output for the three months, 366,941 tons. Total British and American output for the months of January, February, and March, 1918, 842,891 tons; to this can be added 1,000,000 tons of Dutch merchant shipping commandeered by Britain and America during March, and 150,000 tons of Japanese shipping recently transferred to American register; total, 1,992,891 tons. As the losses for January, February, and March were 1,350,000 tons, the allied shipping situation on April 1, 1918, is better than on January 1, 1918, by 642,891 tons.

AMERICAN SHIPPING OUTPUT, 1918.

The merchant shipping tonnage that will be put afloat by America in 1918 bids fair to be a potent factor in the defeat of the German submarine, for America, at a stride, has attained the foremost place among shipbuilding nations.

The statistics here given are taken from a statement made to the "National Marine League" by Mr. Edward N. Hurley, Chairman of the United States Shipping Board, and published in the *New York Times* of March 27, 1918.

NEW YARDS.

The statement lays stress on the vital need of ships to insure the full power of America in men, munitions, and supplies, being brought into play in the war zone, and then goes on to state what has already been done and is being done to supply this need.

At the time of America's entry into the war there were 37 steel shipyards in the country; there are now 81 additional yards for the building of steel and of wooden ships, while 18 of the original yards have been expanded.

SESSIONAL PAPER No. 21

At the outset the 37 old yards began increasing their capacity and now have 195 ways as against the original 162. Thirty new steel yards are built or building, with a total of 203 ways. The aggregate of 67 steel shipyards will have a total of 398 ways; of these, 35 yards with 258 ways, are on the Atlantic and Gulf coasts; 19 with 66 ways on the Pacific, and 13 with 74 ways on the Great Lakes.

With regard to the yards for the building of wooden ships, the original 24, with 73 shipways, have now been increased to 81, with 332 ways, either completed or nearing completion.

The 332 wooden ways added to the 398 steel ways give a grand total of 730 ways for the building of steel and of wooden ships, or 521 more berths than at present obtain in England, according to a recent statement of Sir Eric Geddes.

ASSEMBLING YARDS.

This term has been applied to three huge yards at Hog Island, near Philadelphia, on the west bank of the Delaware river, Newark Bay, N. J., and Bristol, Penn., because fabricated shipbuilding material from all parts of the United States is sent to them to be made up into the completed ship.

Hog Island, the largest of these, and by far the largest single shipbuilding yard and plant in the world, has 50 ways, Newark Bay 28, and Bristol 12.

The work of building these yards, with their numerous ways, in waste places and under the most trying weather conditions which induced severe congestion of traffic has been remarkable to a degree. Owing to their size, the output of these yards will be cumulative; thus at Newark Bay, 15 keels are already laid on the 15 completed ways, the remaining 13 ways are nearing completion; when these are finished a number of the ships on the first 15 ways will have been built, and these vacant ways plus the additional thirteen will all be available for the laying down of new keels; in the case of the Hog Island yard, owing to the much larger number of ways this cumulative effect will be nearly doubled.

It is estimated that when these three assembling yards are in full operation and being worked at pressure, they will turn out nearly as much tonnage in the course of a year as Great Britain has hitherto been able to produce in the same period.

TONNAGE UNDER CONTRACT AND AFLOAT.

The American yards had at the outset, under contract, 8,205,708 deadweight tons of steel merchant shipping, divided as follows: 5,160,300 tons under contract with the Emergency Fleet Corporation, and 3,045,508 tons of requisition vessels; and 1,715,000 tons of wooden vessels as well; what part of this vast project will be completed by the close of 1918 is at present, of course, impossible to determine, but this much is certain, on March 1, 1918, 655,456 tons or approximately 8 per cent were completed and in use, the output for the month of March was 188,275 tons, a total of 843,731 tons of American new construction afloat by April 1, 1918.

Besides this new construction, 112 German and Austrian vessels interned in American ports and badly crippled by their crews, were repaired and made serviceable; these represented a carrying capacity of 800,000 tons, if to this tonnage and to the new construction tonnage be added the 1,000,000 tons of Dutch merchant shipping commandeered in British and American ports during the month of March, and the 150,000 tons of Japanese shipping recently transferred to America in exchange for steel plates, it gives a total additional tonnage of 2,793,731 afloat on April 1, 1918, for the service of the Allies.

9 GEORGE V, A. 1919

TRAINING OF WORKMEN.

The methods adopted in the United States for the intensive training in shipbuilding of their new workmen merit close attention by maritime or prospective maritime peoples.

In a large training school established at Newport News, Va., 247 skilled mechanics selected from 22 different yards, have been undergoing a six-weeks' course of intensive training for the purpose of fitting them for positions as instructors of recruits joining the various yards; 115 of these have already completed their course, and are now acting as instructors; the full force will be capable of training an industrial army of 37,000 men.

A special department for the training of electric welders has been organized, and a volunteer force of 250,000 craftsmen enrolled who have placed their services in regard to both time and place at the absolute disposal of the Government in the prosecution of their shipbuilding plans.

JAPANESE SHIPBUILDING PROGRAMME, 1918.

Japan has not been included in the estimates already given, as her shipbuilding has been entirely in her own interest, and very few of her merchant ships enter the war zone; it may not always be so, however, should the war continue; the Japanese shipbuilding programme for 1918 is therefore of interest.

According to the *New York Nautical Gazette*, which gives the names of the Japanese owners, and the yards in which the ships are building, the Japanese plan of shipbuilding for 1918 comprises 88 ships of 644,414 total deadweight tonnage.

Japan now ranks third among the nations of the world in shipbuilding, and fifth in merchant tonnage.

CANADA AND SEA TRANSPORT.

Prior to the war, and for sometime after, there were ten large ship companies operating between Canadian and British and Continental ports; owing, however, to the increasing toll of British, Allied, and Neutral shipping taken by mine and submarine and the shortage resulting, the demand for ships grew more insistent, and a number of vessels were taken from the Canadian and transferred to the Mediterranean and other routes wherever the need was most pressing; so that the conditions facing Canada to-day are, that whereas a few years ago there were ten companies operating at full capacity between Canadian and British and Foreign ports, there are now only about half that number with less than half the previous number of ships, operating intermittently.

In the reconstruction period after the war there will be an increased demand for Canadian raw material and foodstuffs, and very possibly for manufactured articles as well, Canada being now a very much better known and more widely advertised country; as British shipping to this country has been cut down by one-half and is not likely to be re-established for some years, owing to the lack of shipping everywhere and the need of shipping on all routes, it is apparent that if Canada is to have the required transportation, she must acquire the necessary ships.

GOVERNMENT SHIPBUILDING PROGRAMME.

There are three ways of establishing a merchant marine: by purchase outright, by placing orders with foreign shipyards for delivery at a stated time, or by building in home shipyards.

SESSIONAL PAPER No. 21

Australia during the first years of the war, feeling the pinch of lack of transport, bought sixteen cargo steamers, which not only relieved the congestion of her own export trade, but were of service in the general carrying trade of the Empire.

The great advantage of outright purchase is that the earning power of the ships, and payment of dividends on their outlay, begin at once; the deadweight price of freighters just now for immediate or prompt delivery is abnormally high, about \$200 per ton, and indeed it is doubtful if any considerable number could now be obtainable at that or almost any price, as shipyards all over the world, including those of the Japanese, are being worked to their full capacity to supply ships for their own merchant marine, in anticipation of the tremendous demands that will be made on ocean tonnage in the period following the war.

Taking these factors into account the Canadian Government has decided to build annually 200,000 tons of merchant shipping at an estimated cost of between \$40,000,000 and \$50,000,000.

The principal shipyards for the building of steel cargo vessels at present operating in Canada are as follows:—

No.	Firm.	Plant.	No. of Berths.
1	The Davie Shipbuilding & Repairing Co....	Shipyard and drydock	4
2	Canadian Vickers, Ltd.....	Shipyard, engine and boiler shops and floating dock.	5
3	The Polson Iron Works, Ltd., Toronto.....	Shipyard, engine and boiler shops. ...	4
4	The Thor Iron Works, Ltd., Toronto.....	Shipyard only.....	5
5	Canadian Allis Chalmers, Ltd., Bridgeburg...	Shipyard, engine and boiler shops.....	3
6	Collingwood Shipbuilding Co., Ltd., Collingwood.....	Shipyard, engine and boiler shops	4
7	The Midland Shipbuilding Co., Ltd., Midland	Shipyard only	2
8	The British American Shipbuilding Co., Wel-		
	land.....	Shipyard only.....	3
9	Port Arthur Shipbuilding Co., Port Arthur..	Shipyard, engine and boiler shops.....	4
10	Wallace Shipyards, Ltd., Vancouver, B.C....	Shipyard, engine and boiler shops.....	3
11	Coughlan & Sons, Ltd.	Shipyard and boiler shop.....	4
12	Tidewater Shipbuilding Co., Three Rivers,		
	Que.	Shipyard only.....	2
13	Nova Scotia Steel Co., New Glasgow.....	Shipyard only.....	2
			45

Contracts for vessels have already been placed as follows:—

No.	Firm.	Type D.W. tons.	Cost per D.W. ton.	Delivery Date.
			\$	
1	Canadian Vickers....	4,300	207 00	1918
1	"	8,100	180 00	1918
1	Collingwood Shipbuilding Co.....	3,750	205 00	1918
1	Wallace Shipyards, Ltd.....	4,300	207 00	1918
1	"	4,300	207 00	March, 1919
1	"	5,100	200 00	May, 1919
1	"	5,100	200 00	Aug., 1919
1	"	5,100	200 00	Oct., 1919
1	"	5,100	200 00	Dec., 1919
9				

9 GEORGE V, A. 1919

At present there are two berths vacant at Collingwood, and one at the Canadian Vickers yards, Montreal. Two additional berths will be vacant at Collingwood in April and May, 1918, and, at the Vickers yards, one in May, one in August, and one in September, 1918. Two berths will be vacant at Port Arthur in July, and at the Wallace yards, Vancouver, in May and July. The Midland yards will have room for new keels in October and November, and the Welland yards will have a berth ready in May, a second in July, a third in September, and a fourth in November. At Toronto the Polsons will have four berths vacant in October. The Tidewater Shipbuilding Company will have a berth ready soon, and the Levis yards another during the summer. The Bridgeburg yards will be in a position to lay down six keels before the end of the present year. The Coughlan yards will not be available during the present year, as they will be fully occupied in supplying orders already given.

The annual output of 200,000 tons contemplated is only the beginning of the Canadian merchant marine fleet, and the probability is that in 1919 or thereabouts the government project will be considerably extended.

The ships will be at the disposal of the British Admiralty during the war period, and at its close will revert to Canada to be operated either by the Government itself or by Canadian shipowners under charter from the Government.

MERITS OF PLAN.

There are a number of advantages accruing from the plan adopted by the Government for the building of a merchant fleet.

In the first place the cost per ton deadweight will be less than if the contracts were given to foreign yards for prompt delivery. The money involved instead of going out of will be spent in the country in aiding an industry the growth of which is important to the future welfare and development of Canadian trade and commerce. It will be the means of providing, when its scope is extended, for a number of munition workers who will be thrown out of employment after the war, particularly if rolling mills on a more or less extended scale are started in connection with the Canadian shipbuilding industry; and finally, it will mean the augmenting of a class of men invaluable to any country—the merchant mariners.

In order to hasten the construction of the vessels it was deemed advisable to utilize to the utmost the present Canadian yards, and to work at full pressure, rather than to multiply the number of shipyards, some of which would in all probability be undermanned for some time owing to lack of skilled workmen.

STANDARDIZING THE SHIPS.

Three principal types of vessels will be built under the government plan.

The first type will consist of vessels of about 3,750 tons deadweight capacity, length over all 260 feet, speed 9 knots; these vessels will be of the tramp type, and will be built principally in the Great Lakes shipyards, to avoid difficulty with canal locks.

An intermediate type will include ships of 4,300 tons deadweight capacity, length B.P. 320 feet, speed 12 knots.

The second type will comprise vessels of 5,000 tons to 7,000 tons deadweight (cargo liners), length over all 331 feet, speed $11\frac{1}{2}$ knots.

The third will consist of combination liners, as provision will be made for carrying passengers as well as cargo; they will be of 8,000 to 10,000 tons deadweight capacity, length over all 400 feet, speed 12 knots.

These ships will be all built to a standard set of plans and specifications prepared for each type by the chief naval constructor of the department and his staff to

SESSIONAL PAPER No. 21

ensure uniformity and speed in construction, and the work of supervising the vessels while actually under construction in the different Canadian shipyards will also be undertaken by this body.

It is found by actual experience that the cargo vessel which gives the best return on outlay is one ranging between 7,000 and 10,000 tons deadweight capacity; below 7,000 tons and over 10,000 the ratio of wage-earning capacity to the cost of building is not so favourable.

This last type will fulfil this very essential condition, and will be the one which will perform the bulk of the work of Canadian sea transport.

PERSONNEL.

The work of providing suitable crews for the new Canadian merchant marine fleet will be of the first importance.

The Marine Department issues all certificates for masters, mates, and engineers of sea-going vessels, and is keeping an exact monthly register of all the men that are qualified for these positions, and of their whereabouts in order that their services may be requisitioned when required.

Every encouragement is also being given to seamen to induce them to attend the navigation schools at Halifax, Yarmouth, St. John, N.B., Kingston, North Sydney, and Vancouver, to take courses in navigation before qualifying for their certificates.

The Canadian Naval League is also aiding in the formation of naval brigades for the training of the young, and is carrying on an educational campaign emphasizing the importance to Canada of the building up of a merchant marine.

It is important that the personnel of the officers and crews of Canadian merchant ships should be confined as far as possible to Canadians, failing these to British or Americans, to ensure a common language. The employment of alien crews should be avoided at all costs. In this connection the testimony of Rear-Admiral Leigh Palmer, given before the American House Committee on Naval Affairs, and reprinted in the *New York Times* of February 9, is interesting and illuminating. It is published under the heading: "How alien crews imperil our ships."

Admiral Palmer sent three officers from his bureau in charge of armed guards on ships with alien crews plying from American to British ports, and instances some of their experiences. Many of the ships seem to have been floating towers of Babel and the confusion and disorder on board almost indescribable.

On one ship sailing from New York almost the entire crew, including storekeeper, boatswain, and boatswain's mate, came on board drunk. In passing through the war zone members of the engineer force persisted in smoking on exposed decks; as they were all foreigners and did not understand a word of English the guard had to remove the cigarettes and put them out.

"Steamship *Navajo*, August 1, 1917, 800 miles west of Ireland, shelled by submarine. Ship caught fire. Five minutes after alarm of fire crew abandoned ship. No effort made to put out flames. Boats loaded without stopping engines. Later crew returned on board, flames then being under control."

"Steamship *Wico*, August 6, 1917, near island of Guernsey, ship convoyed by British destroyer. Submarine sighted five hundred yards distant. One shot fired immediately and submarine submerged. Captain immediately on sighting submarine gave orders to 'abandon ship.' Armed guard prevented ship being abandoned and at point of pistol drove engineer force, including chief, below. Engines were started and ship resumed her voyage uninjured. Her escape undoubtedly due to presence of British destroyer. Merchant complement did everything possible to lose her."

"Steamship *Finland*, October 27, 1917, torpedoed in convoy, did not see torpedo or periscope. Greatest confusion of merchant complement, started to abandon ship

9 GEORGE V, A. 1919

immediately. Only loss of life caused by boat falling while being lowered, spilling people into water."

"British ship *Idoemnus*, September 15, 1917, torpedoed near land. All hands immediately abandoned ship. Ship floated. Patrol vessels arrived and towed ship where she could be beached; otherwise would have been lost through hasty abandonment."

"French steamship *Mississippi*, bound for New Orleans, not in convoy, but a convoy and escort in sight, torpedoed, and submarine made off immediately, undoubtedly on account of convoy escort. Crew abandoned ship at once. Later a British patrol vessel happened by, put a crew aboard and brought her in. This is a typical case of hasty abandonment, and only by luck was she saved."

These instances, taken from a number cited by Admiral Palmer, of misconduct by alien crews, occurred during a period of intensive submarine war, when seamen's nerves were inclined to be jumpy; but the ordinary perils of the sea are by no means to be ignored, and take yearly a heavy toll of tonnage.

Improper conduct by a ship's company in a time of stress and danger may easily mean the loss of the vessel; this risk will undoubtedly be lessened by excluding aliens from the complements of Canadian ships.

CANADIAN SHIPBUILDING DISABILITIES.

In last year's report allusion was made to certain drawbacks attending the initial stages of Canadian shipbuilding; there is no reason why these should not be overcome in the course of a few years, with the exception of that of the climate, which in certain localities will not permit the launching of ships at all seasons of the year.

At present the greatest obstacle to the rapid and cheap production of steel ships in Canada is the lack of rolling mills capable of making steel plates and structural steel shapes for the larger cargo ships, in quantity; all the other parts of the ships, including the engines, can be made in Canada, but in order to carry its programme of building merchant ships to a successful completion, it was necessary for the Government to enter into negotiations with American firms for the supply of the needed plates and shapes; although the Americans at present are very much occupied with their own shipbuilding problems, these negotiations have fortunately been successful, and the necessary supplies for the Canadian merchant fleet have been assured.

It will, however, be of great advantage to the industry if, after the war, every effort is made to establish rolling mills on an extensive scale in suitable localities, in order that all the demands made on Canadian shipbuilding may be met by Canadian firms.

INSURANCE RATES AND THE ST. LAWRENCE ROUTE.

The formation of a Canadian merchant marine brings into greater prominence the question of the restrictions placed on the trade of this route by insurance underwriters, as compared with Atlantic port routes; restrictions which, in the opinion of a number of men qualified to judge, are somewhat unfair.

This high rate of insurance means an additional overhead charge on all vessels using this route.

The discrimination against the St. Lawrence route has been carried out despite the constant work of improvement done in the widening and deepening, and the lighting and buoying of the ship channel between Montreal and Father Point; the expenditure on this work has exceeded \$1,000,000 annually for the last three years as follows: for the fiscal year 1914-15, \$1,105,187; 1915-16, \$1,101,820; 1916-17, \$1,122,479; and the total cost of the channel since its inception in 1851 to the end of the fiscal year 1917 has been \$21,520,371.

SESSIONAL PAPER No. 21

From Montreal to Quebec is 160 statute miles, and from Quebec to Father Point 181, and it is doubtful if any other waterway in the world of equal extent is more thoroughly safeguarded.

In the department's annual report for 1916-17, the superintending engineer of the St. Lawrence ship channel drew attention to a communication received from Messrs. Henry Fry and Company, Lloyds agents at Quebec, emphasizing the fact that no accident had occurred to any sea-going vessel between Father Point and Quebec in the course of the year, and he attributes this not only to the improved lighting and buoying of the channel, but also to the increased efficiency of the Pilotage Service.

If the continued improvement and additional safety of this route from year to year have not the desired effect of inducing Lloyds to lower the insurance rates for vessels trading on it, it may be necessary, in the interests of Canadian shipping, for the Government itself to take some steps to equalize the difference between the rates to Quebec and Montreal and those to the Atlantic ports.

OPERATIONS OF CHIEF CANADIAN SHIPBUILDING PLANTS.

CANADIAN VICKERS, LTD., MONTREAL, QUE.

During the fiscal year 1917-18, additional shipbuilding sheds were built with overhead crane attachment, giving a complete layout of six building berths capable of taking vessels up to 10,000 tons.

The boiler shop was extended to a length of 164 feet and fitted with a 25-ton overhead travelling crane and necessary machine equipment. A large number of additional machine tools were installed during the year.

The shell shop was dismantled and equipped throughout for the manufacture of deck machinery such as cargo winches, windlasses, steam- and hand-steering gears, etc., and at the close of the year there were a number of orders in hand.

During the year, 12 submarines of 150 feet, 467 tons displacement, were built for the Allied Governments, and 8 steel trawlers for the Naval Service of 130 feet, 298 tons gross; 9 steel trawler hulls, with engines and boilers, were also supplied to the Naval Service, and 26 wooden drifter hulls.

Vessels under construction are a centre-ladder twin-screw hopper- and barge-loading dredge for the Marine Department; length 284 feet, breadth 48 feet, dredging depth 57 feet. Two cargo steamers for British flag are already launched, 7,000 tons deadweight capacity; length B.P. 390 feet, breadth moulded 49 feet, depth moulded 30 feet, speed 9 knots. Four cargo steamers for Imperial Munitions Board 7,000 tons deadweight; length B.P. 380 feet, breadth moulded 49 feet.

MIDLAND SHIPBUILDING CO., LTD., MIDLAND, ONT.

This company was formed in 1917 with a capital of \$1,000,000.

The plant comprises: a brick office 50 feet by 32 feet of two stories, with clerical department and draughting office; a punch shed 210 feet by 100 feet, with mould loft above, with electrical boring and cutting machines; a furnace room, frame building 175 feet by 55 feet, with two heating furnaces, one for plates and one for angles, burning crude oil; in front of the furnaces is a 50-foot square cast-iron slab with air winch for handling material; and at one end of the building a large hammer operated by air, and blacksmith fires. A boiler-house of brick 30 feet by 50 feet has two boilers carrying 125 pounds of steam. The machine shop, 100 feet by 50 feet, is supplied with two air compressors, one with a capacity of 3,000 cubic feet driven by a 450-horsepower motor, and the other with a capacity of 780 cubic feet per minute; frame carpenter shop, 155 feet by 50 feet, for sawing and dressing materials completes the plant.

9 GEORGE V, A. 1919

The company has at present about 900 feet of water front, along which travels a Gantry crane with a span of 240 feet, and a hoisting capacity of 5 tons at the outer end and 20 tons at the centre.

The company has at present one ship on the stocks and a contract for three others with the Imperial Munitions Board.

CANADIAN ALLIS-CHALMERS, LTD., BRIDGEBURG, ONT.

Incorporated from a bridge and structural plant to a shipbuilding plant in the autumn of 1917 and arrangements made with the Imperial Munitions Board for the building of four ships, length 261 feet over all, beam 43·6 feet, draught 23·6 feet, tonnage 3,500 deadweight tons, speed 11 knots; the capacity of the plant as now completed is ten 3,500-ton ships yearly; the property covers 600 acres and includes one-third of a mile of water front, with ample docking and launching capacity. The berths are equipped with modern travelling crane and facilities for launching vessels when completed.

The buildings consist of large plate shop, equipped with modern tools for the construction of ships, carpenter shop, power-house, and stores building.

The buildings are of steel construction, and adjacent to the shipbuilding berths as now constructed and as proposed.

Electric power is obtained from the Canadian Niagara Power Company.

PORT ARTHUR SHIPBUILDING CO., LTD., PORT ARTHUR, ONT.

This company during the fiscal year 1917-18 built and delivered three steel cargo steamers of the following dimensions:—

Name of Vessel.	Length.	Breadth.	Depth.	Tonnage d.w.	Speed (knots).
<i>Ugelstad</i>	261'	43·6'	28·2'	4,300	9½
<i>War Fish</i>	261'	43·6'	28·2'	4,300	9½
<i>War Dance</i>	261'	43·6'	23'	3,250	10½

Four trawlers, length 134 feet, gross 294·5, were also constructed for the Department of the Naval Service.

In addition, there are under construction two trawlers and three freight steamers.

WESTERN CANADA SHIPYARDS, LTD., VANCOUVER, B.C.

This company was formed with a capital of \$30,000 to build six wooden steamers for the Imperial Munitions Board; length 250 feet, beam 43·6 feet, depth moulded 25 feet.

This yard has four ways and a complete equipment for the building of wooden ships.

BRITISH AMERICAN SHIPBUILDING CO., LTD., WELLAND, ONT.

Was incorporated in July, 1917, at a capitalization of \$1,000,000.

The yard is on the Welland canal, and employs 325 to 375 men, operates two building berths, and is capable of turning out yearly four steel vessels of the following dimensions: length 261 feet, beam 43 feet, depth 23 feet, tonnage 3,500 deadweight tons; three vessels similar to these are at present being built for the Imperial Munitions Board.

YARROWS, LIMITED, ESQUIMALT, B.C.

The following improvements and additions have been made to this plant during the fiscal year 1917-18: foundry enlarged to 120 feet by 70 feet, and two travelling

SESSIONAL PAPER No. 21

cranes running full length of shop installed, one of 10-ton and one of 5-ton capacity. Blacksmith shop enlarged and 4-inch pneumatic hammer installed. New welding and coppersmith shop 24 feet by 6 feet has been built. A 10-ton floating crane with a 90-foot boom has been added to the plant.

The work of the yard for 1917-18 consisted chiefly of repairs to ships, but the following vessels were completed during the year: stern-wheel steamer *Saga*, 132 feet by 31 feet by 4.9 feet; stern-wheel steamer *Sind*, 132 feet by 31 feet by 4.9 feet; another stern-wheel steamer, 165 feet by 34 feet by 7 feet is at present under construction.

J. COUGHLAN & SONS, LTD., VANCOUVER, B.C.

This shipyard has a frontage of 1,000 feet on False creek, with a depth of another thousand feet, and a capacity, subject to the obtaining of material, of one 8,800-ton steel boat a month.

It was established in 1917, and took orders for three 8,800-ton steel vessels for the Norwegian Government, two of which were subsequently sold to the Imperial Munitions Board.

The yard has at present under contract for the Imperial Munitions Board seven 8,800-ton vessels, two of which are at present launched, and the remaining five will be launched at the rate of one per month (approximately).

A fully equipped boiler-shop, which supplies all the boilers for their ships, is included in the plant.

WALLACE SHIPYARDS, LTD., VANCOUVER, B.C.

The plant of this company is at present being considerably increased; two new ways are being built, which, when completed, will give three berths capable of taking vessels up to 450 feet in length.

The plant is equipped with modern machine shop, forge pattern shop, foundry, boiler shop, joiner shop, etc. There are two marine railways capable of hauling 2,300 and 1,500 tons, respectively, and at the end of the dock which is 400 feet long, are shear legs with a lifting capacity of 65 tons.

During the year the vessels built were the *War Dog* and the *War Power*, sister ships, length over all 315 feet, breadth moulded 45 feet, depth moulded 27 feet, the 1,500-I.H.P. triple expansion engines for these ships were built and installed by the firm.

The wooden shipbuilding yard which formed a part of this plant and which had built six wooden auxiliary, five-masted schooners, 250 feet by 45 feet by 19 feet, was disposed of to the William Lyall Shipbuilding Company in September last.

CAMERON GENOA MILLS, LIMITED, VICTORIA, B.C.

This shipbuilding company was incorporated in 1916, with a capital of \$25,000, and an original programme for the construction of three 2,500-ton auxiliary schooners, and three berths were laid down; in June, 1917, a contract was undertaken for the Imperial Munitions Board to supply four wooden steamers from plans and specifications furnished by them, and another berth was laid down, making four in all. The last of these vessels will be completed by the middle of June.

The following lumber-carrying vessels were also built:—

	Tons reg.	Length.	Breadth.	Depth.
<i>Margaret Haney</i>	800	250'	45'	20'
<i>Laurel Whalen</i>	1,048	250'	45'	20'
<i>Esquimalt</i>	1,058	250'	45'	20'
<i>Malahat</i>	1,429	250'	45'	20'
<i>Jean Steedman</i>	1,252	250'	45'	20'
<i>Beatrice Castle</i>	1,248	250'	45'	20'

9 GEORGE V, A. 1919

The carrying capacity of these vessels is 1,500,000 feet of lumber.

Other Canadian steel and wooden shipbuilding plants are: Davie Shipbuilding and Repairing Company, Levis, Que.; Nova Scotia Steel and Coal Company, New Glasgow, N.S.; Dominion Shipbuilding Company, Toronto, Ont.; Polson Iron Works, Limited, Toronto, Ont.; Collingwood Shipbuilding Company; Kingston Shipbuilding Company; and Tidewater Shipbuilding Company, Three Rivers, Que.

WOODEN SHIPBUILDING PLANTS IN CANADA.

- | | |
|--|---|
| Annapolis Shipping Co., Annapolis Royal, N.S. | Beazley Brothers, Weymouth, N.S. |
| Fauquier & Porter, Hantsport, N.S. | Warren, Rice & Co., Weymouth, N.S. |
| Mortimer Parsons, Cheverie, N.S. | W. K. Smith, Plympton, N.S. |
| Bernard M. Melanson, Gilbert's Cove, N.S. | Eastern Shipbuilding Co., Ship harbour, N.S. |
| Ernst Shipbuilding Co., Mahone Bay, N.S. | Shelburne Shipbuilders, Ltd., Shelburne, N.S. |
| W. R. & C. A. Huntley, Parrsboro, N.S. | Robert Rutledge, Sheet harbour, N.S. |
| J. F. Deveau, Meteghan, N.S. | J. W. Raymond, Port Maitland, N.S. |
| Smith & Rhuland, Lunenburg, N.S. | Robin, Jones & Whitman, Liverpool, N.S. |
| Comeau Shipping Co., Comeauville, N.S. | James Willard Smith, Hillsburn, N.S. |
| F. H. McDonald, Meteghan, N.S. | McLean Construction Co., Lunenburg, N.S. |
| Amos Blinn, Grosses Coques, N.S. | Conrad & Reinhardt, Park's Creek, N.S. |
| Theriault & Co., Belliveau Cove, N.S. | Saulnierville Shipbuilding Co., Saulnierville, N.S. |
| J. N. Rafuse, Conquerall Bank, N.S. | Nova Scotia Shipbuilding and Transportation Co., Liverpool, N.S. |
| L. E. Graham, Port Greville, N.S. | Chester Basins Shipbuilders, Ltd., Chester Basin, N.S. |
| Robar Brothers, Bridgewater, N.S. | Falmouth Shipbuilding and Transportation Co., Windsor, N.S. |
| Fred. Comeau, Little Brook, N.S. | Foley Brothers, Hantsport, N.S. |
| F. K. Warren, Grosses Coques, N.S. | Sydney St. C. Jones, Little Brook, N.S. |
| William Naugler, Bridgewater, N.S. | Clare Shipbuilding Co., Meteghan, N.S. |
| Wagstaff & Hatfield, Port Greville, N.S. | Yarmouth Shipbuilding Co., Yarmouth, N.S. |
| G. M. Cochrane, Fox River, N.S. | John McLean & Son, Halifax, N.S. |
| James E. Pettis, Spencer's island, N.S. | James X. Lenteigne, Lower Caraquet, N.B. |
| T. K. Bentley, Advocate harbour, N.S. | Marine Construction Co., of Canada, Limited, St. John, N.B. |
| W. M. McLean & Co., Mahone Bay, N.S. | International Shipbuilding Corporation, Limited, Nordin, N.B. |
| Harkinson Shipping Co., Belliveau Cove, N.S. | Chas. T. White & Son, Sussex, N.B. |
| Southern Salvage Co., Liverpool, N.S. | St. Martin's Shipbuilding Co., St. Martin, N.B. |
| Thomas German, Meteghan, N.S. | Grant & Horne, St. John, N.B. |
| Moise Belliveau, Church Point, N.S. | Quebec Shipbuilding and Repairing Co., St. Laurent, Que. (Isle of Orleans). |
| Fidele Boudreau, Church Point, N.S. | H. H. Shepherd, Sorel, Que. |
| Albert Parsons, Walton, N.S. | Leclaire & Fils, Sorel, Que. |
| Geo. A. Cox, Shelburne, N.S. | Tidewaters Shipbuilders, Ltd., Sorel, Que. |
| W. C. McKay & Son, Shelburne, N.S. | Quinlan & Robertson, Quebec, Que. |
| Joseph McGill Shipbuilding and Transportation Co., Shelburne, N.S. | T. M. Kirkwood, Three Rivers, Que. |
| Lewis Shipbuilding Co., Sheet Harbour, N.S. | R. N. LeBlanc, Bonaventure, Que. |
| E. F. Williams, Dartmouth, N.S. | Sincennes McNaughton Line, Ltd., Sorel, Que. |
| Charles Griffin, Isaacs harbour, N.S. | Fraser, Brace & Co., Limited, Montreal, Que. |
| J. A. Balcom & Co., Limited, Margaretsville, N.S. | West, Peachy & Co., Simcoe, Ont. |
| Meteghan Railway and Shipbuilding Co., Meteghan, N.S. | Great Lakes Dredging Co., Fort William, Ont. |
| O. O'Brien, Noel, N.S. | The Foundation Co., Vancouver, B.C. |
| Noel Shipbuilding Co., Noel, N.S. | British Columbia Construction and Engineering Co., New Westminster, B.C. |
| H. McAloney, Canning, N.S. | Pacific Construction Co., Coquitlam, B.C. |
| B. L. Tucker, Bass River, N.S. | Wm. Lyall Shipbuilding Co., N. Vancouver, B.C. |
| S. Salter, Parrsboro, N.S. | Vancouver Shipyards, Limited, Vancouver, B.C. |
| J. S. Pugsley, Diligent river, N.S. | Northern Construction Co., Vancouver, B.C. |
| S. J. Soley, Fox river, N.S. | New Westminster Construction Co., New Westminster, B.C. |
| H. Elderkin & Co., Port Greville, N.S. | |
| Smith Canning, Port Greville, N.S. | |
| McLean & McKay, Economy, N.S. | |
| Allan & Fraser, Fraserville, N.S. | |
| J. W. Kirkpatrick, West Advocate, N.S. | |
| Archibald McKenzie, River John, N.S. | |
| Charles McLellan, River John, N.S. | |
| Charles McNeil, New Glasgow, N.S. | |
| Hilaire Boudreau, White Cove, N.S. | |

STATISTICS OF CANADIAN SHIPPING.
STATEMENT of vessels built in Canada and registered during the year 1917.

Province.	Wood.						Metal.						Totals.		
	Sailing.			Steam.			Sailing.			Steam.			Gas.		
	Tonnage.		No.	Tonnage.		No.	Tonnage.		No.	Tonnage.		No.	Tonnage.		
	Gross.	Net.		Gross.	Net.		Gross.	Net.		Gross.	Net.		Gross.	Net.	
	No.			No.			No.			No.			No.	Gross.	Net.
Nova Scotia	57	15,250	12,887	4	986	559	24	588	524	1	1,422	810	86	18,246	14,780
New Brunswick	22	1,140	1,140	..	..	..	1	25	16	..	..	..	23	1,165	1,156
Prince Edward Island .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Quebec	13	1,928	1,848	8	698	317	9	251	173	2	7,760	5,720	32	10,637	8,058
Ontario	1	67	67	13	973	543	2	29	19	3	5,403	3,302	21	6,507	3,949
Manitoba .....	..	..	..	2	1,211	864	2	26	17	..	..	..	4	1,237	881
Saskatchewan .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
British Columbia	12	5,372	5,238	..	..	..	65	15,903	12,214	..	..	..	77	21,275	17,452
Total	105	23,757	21,180	27	3,868	2,283	103	16,822	12,963	6	14,585	9,832	243	59,067	46,276

STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, on December 31, 1917.

Ports.	Sailing Vessels.			Steam Vessels.		
	No.	Gross Tonnage.	Net Tonnage.	No.	Gross Tonnage.	Net Tonnage.
<i>Ontario.</i>						
Amherstburg	6	1,490	1,456	10	1,201	615
Belleville	3	241	217	11	241	144
Bowmanville	2	344	316			
Brockville	2	842	771	24	1,380	920
Chatham	4	566	556	10	971	532
Cobourg	1	100	100			
Collingwood	5	1,122	1,122	56	20,153	13,743
Cornwall				5	170	107
Deseronto	5	403	370	6	144	81
Dunnville	1	87	57			
Fort William	1	413	413	3	4,215	2,561
Goderich	7	1,085	1,085	52	1,589	1,056
Hamilton	3	807	780	22	12,573	7,899
Kenora	7	580	580	90	3,319	2,091
Kingston	62	10,091	9,497	115	10,611	6,172
Lindsay	19	1,224	1,224	28	626	416
Midland	7	3,681	3,166	42	39,248	25,845
Napanee	1	122	122			
Oakville	1	26	26			
Ottawa	152	19,192	18,337	291	44,187	23,667
Owen Sound	7	2,326	1,995	35	3,384	2,319
Peterboro	22	1,698	1,698	59	1,310	883
Picton	8	2,435	2,230	14	5,000	3,366
Port Arthur	43	18,766	18,084	76	40,723	25,190
Port Burwell	1	65	65	10	342	191
Port Dover	3	217	217	17	593	392
Port Hope	4	527	527	6	116	75
Port Stanley				2	1,174	768
Prescott	8	1,277	1,149	12	2,222	1,505
Sarnia	11	3,547	3,288	38	25,289	16,338
Southampton	1	96	50	11	410	278
Sault Ste. Marie	40	8,286	7,935	55	22,609	14,468
St. Catharines	28	6,553	5,944	54	2,045	1,336
Simcoe	2	36	36	2	35	18
Toronto	78	16,133	14,300	305	83,994	53,333
Wallaceburg	7	1,159	1,116	10	480	330
Whitby	1	190	190			
Windsor	29	2,818	2,712	20	4,831	2,913
	582	108,545	101,731	1,497	335,185	209,552
<i>Prince Edward Island.</i>						
Charlottetown	131	8,042	7,581	26	7,415	3,374
<i>British Columbia.</i>						
New Westminster	86	12,099	12,080	221	7,647	4,737
Prince Rupert	2	1,264	1,174	40	3,191	1,971
Vancouver	218	33,902	33,468	784	122,656	74,712
Victoria	105	22,725	21,489	278	55,766	33,371
	411	69,990	69,211	1,323	189,260	114,791
<i>Saskatchewan.</i>						
Prince Albert	1	145	145	4	660	385
<i>Manitoba.</i>						
Winnipeg	17	3,394	3,394	82	9,804	6,440

SESSIONAL PAPER No. 21

STATEMENT showing the number of Vessels and number of Tons, etc—Continued.

Ports.	Sailing Vessels.			Steam Vessels.		
	No.	Gross Tonnage.	Net Tonnage.	No.	Gross Tonnage.	Net Tonnage.
<i>Yukon Territory.</i>						
Dawson	1	556	556	9	2,571	1,648
<i>New Brunswick.</i>						
Chatham.....	399	8,198	8,037	99	3,934	2,404
Dorchester.....	3	355	340	2	8	6
Moncton.....	5	298	275	2	119	60
Richibucto.....	23	572	516	16	298	220
Sackville.....	4	302	265	3	65	45
St. Andrews...	158	2,869	2,809	37	761	511
St. John	222	22,942	22,294	101	18,798	12,101
	814	35,536	34,536	260	23,983	15,347
<i>Nova Scotia.</i>						
Amherst	3	148	131	3	168	96
Annapolis Royal.....	15	2,948	2,553	6	330	178
Arichat	97	2,524	2,489	21	352	319
Barrington.....	74	1,829	1,776	21	365	316
Canso.....	46	843	843	3	40	37
Digby	90	2,903	2,769	12	319	228
Guysboro	8	407	395			
Halifax	309	13,223	12,768	121	18,177	10,439
Lahave.....	3	551	443			
Liverpool.....	38	4,102	3,614	28	1,804	895
Lunenburg	266	25,163	20,681	130	2,710	2,190
Maitland.....	12	1,574	1,364	1	88	59
Parrsboro.....	42	11,033	10,155	8	810	524
Pictou	9	341	320	16	577	369
Port Hawkesbury.....	63	1,420	1,404	6	107	98
Port Medway.....	10	840	793	5	76	71
Shelburne	75	5,562	4,842	17	694	511
Sydney	79	4,410	4,142	39	2,223	1,332
Truro.....				1	18	7
Weymouth.....	23	3,415	2,934	11	745	526
Windsor	38	18,227	16,796	17	3,654	2,004
Yarmouth.....	199	4,293	4,191	45	8,955	4,203
	1,499	105,759	95,403	511	42,212	24,402
<i>Quebec.</i>						
Gaspé.....	17	948	858			
Magdalen Islands.....	12	490	481	3	506	249
Montreal.....	293	90,495	87,287	331	194,829	120,682
Paspebiac.....	18	369	349	5	115	73
Quebec.....	463	37,062	36,217	167	34,259	19,824
Sorel.....	36	12,567	11,489	46	13,156	6,433
	839	141,931	136,681	552	242,865	147,261

RECAPITULATION.

New Brunswick	814	35,536	34,536	260	23,983	15,347
Nova Scotia	1,499	105,759	95,403	511	42,212	24,402
Quebec.....	839	141,931	136,681	552	242,865	147,261
Ontario	582	108,545	101,731	1,497	335,185	209,552
Prince Edward Island.....	131	8,042	7,581	26	7,415	3,374
British Columbia.....	411	69,990	68,211	1,323	189,260	114,791
Manitoba	1	145	145	4	660	385
Yukon Territory	17	3,394	3,394	82	9,804	6,440
Saskatchewan	1	556	556	9	2,571	1,648
	4,295	473,898	448,238	4,264	853,955	523,200

COMPARATIVE STATEMENT showing the number of Vessels and number of Tons on the Registry Books of the Dominion of Canada, on December 31, in each year from 1908 to 1917, both inclusive.

Province.	1908.		1909.		1910.		1911.		1912.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.....	938	66,402	937	62,984	951	59,637	966	55,872	1,001	57,369
Nova Scotia.....	2,052	164,919	2,058	160,286	2,054	149,737	2,105	142,631	2,158	143,295
Quebec.....	1,384	172,975	1,432	175,370	1,499	189,945	1,511	193,682	1,566	227,048
Ontario.....	2,028	192,970	2,061	208,652	2,027	227,457	2,014	236,877	2,017	253,376
P. E. Island.....	154	10,387	150	10,154	150	10,100	149	9,683	148	9,577
British Columbia....	939	87,056	1,020	92,746	1,109	105,414	1,227	122,264	1,376	136,618
Manitoba.	87	4,341	90	5,087	94	5,565	96	6,373	95	6,096
Yukon District.....	16	2,984	16	2,984	16	2,784	15	2,708	14	2,543
Saskatchewan.....	4	290	4	290	4	290	5	356	5	356
	7,602	702,324	7,768	718,553	7,904	750,929	8,088	770,446	8,380	836,278

Province.	1913.		1914.		1915.		1916.		1917.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.....	1,031	60,020	1,052	55,522	1,068	56,219	1,074	49,817	1,074	49,883
Nova Scotia.... ..	2,106	138,107	2,098	135,053	2,087	125,567	2,064	123,058	2,010	119,805
Quebec	1,628	247,225	1,663	259,143	1,590	267,897	1,452	273,770	1,391	283,942
Ontario	2,012	279,642	2,100	314,660	2,111	312,971	2,116	328,531	2,079	311,283
P. E. Island.....	149	10,071	149	10,029	158	11,518	155	10,652	157	10,955
British Columbia....	1,506	15,306	1,591	147,192	1,643	144,835	1,687	145,525	1,734	183,002
Manitoba..... ..	93	5,545	103	7,999	84	7,480	95	8,953	5	530
Yukon District.. ...	15	2,940	11	2,295	11	2,295	11	2,295	99	9,834
Saskatchewan. . .	5	356	5	529	5	530	5	530	10	2,204
	8,545	896,965	8,772	932,422	8,757	929,312	8,659	943,131	8,559	971,438

SESSIONAL PAPER No. 21

COMPARATIVE STATEMENT of New Vessels built and registered in the Dominion of Canada and their Net Tonnage during the year ended December 31, in each year from 1908 to 1917, both inclusive.

Province.	1908.		1909.		1910.		1911.		1912.	
	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick.....	32	1,288	14	666	17	397	25	774	44	1,092
Nova Scotia.....	80	6,600	75	6,007	82	5,572	136	5,340	126	5,853
Quebec.....	62	7,279	66	5,895	58	7,012	30	2,726	49	5,744
Ontario.....	46	8,695	73	7,973	46	3,612	42	10,086	71	11,170
P. E. Island.....	5	254	1	5	2	23	4	61	1	34
British Columbia....	76	4,778	93	4,068	84	5,177	98	7,781	128	10,647
Manitoba.....	1	9	5	692	5	490	3	902	1	546
Yukon District.....	2	80								
Saskatchewan.....							1	66		
	304	28,933	327	25,306	294	22,283	339	27,736	420	34,886

Province.	1913.		1914.		1915.		1916.		1917.	
	Vessels	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.	Vessels.	Tons.
New Brunswick....	45	1,114	31	1,319	22	1,114	22	332	23	1,156
Nova Scotia.....	67	4,899	56	3,303	51	2,982	65	7,661	86	14,781
Quebec.....	62	8,667	51	6,753	49	7,790	51	8,643	32	8,058
Ontario.....	38	15,572	78	23,567	38	4,709	26	5,507	21	3,949
P. E. Island.....	3	804	2	35	2	24				
British Columbia....	128	9,000	97	5,867	79	2,057	65	4,487	77	17,452
Manitoba.....	1	18	11	2,899	5	156	15	1,573	4	881
Yukon District..			1	3						
Saskatchewan..										
	344	40,164	327	43,246	246	18,832	244	28,303	243	46,277

STATEMENT showing the number of Vessels removed from Registry in the Dominion of Canada during the year ended December 31, 1917, and the cause for such removal.

Sold to foreigners—U.S.A. 19, French 12, Danish 2, Russia 1..	34
Wrecked..	48
Stranded..	11
Lost..	9
Broken up, reported out of existence, condemned, dismantled, abandoned, etc..	216
Abandoned at sea..	9
Colision..	7
Foundered..	9
Burnt..	16
Transferred to St. John's, Nfld..	16
" Barbadoes..	3
" Georgetown Demerara..	1
" Great Britain..	5
Missing..	6
Sunk by mine 1, by torpedo 14, by German raider 6, captured by German submarine 1..	22
	<hr/> 412 <hr/>

It is estimated that 45,280 men and boys, etc., inclusive of masters, were employed on ships registered in Canada during the year 1917.

EXPENDITURE AND REVENUE.

The parliamentary appropriation for the fiscal year 1917-18 was \$5,153,861.14; the expenditure \$4,361,498.41; leaving an unexpended balance of \$792,362.73, less overdraft of \$19.49, \$792,343.24. The net revenue was \$228,812.13.

CORRESPONDENCE.

The total number of letters received during the fiscal year 1917-18 was 57,562, as against 48,792 in 1916-17.

The increase is due chiefly to the correspondence relating to the control of shipping, and the new shipbuilding programme.

The number of letters sent out was 33,220, as against 34,865 in 1916-17.

SEASON OF NAVIGATION.

Navigation in Montreal harbour opened on April 26, 1917, when three coasting steamers which had wintered there proceeded out.

The steamship *Percesien* arrived from Halifax on May 1, and the ss. *Cassandra* from Glasgow on the same date.

Navigation closed on December 8, 1917, but owing to the severity of the fall weather, many lake vessels and overseas trawlers were obliged to winter at Montreal or ports between it and Quebec.

STEAMBOAT INSPECTION.

The report of the Chairman of the Board of Steamboat Inspection is published as a supplement to the annual report.

A. JOHNSTON,
Deputy Minister of Marine and Fisheries.

APPENDIX No. 1.

ANNUAL REPORT OF COL. WM. P. ANDERSON, C.M.G., M. INST. C.E., ETC.,
CHIEF ENGINEER OF THE DEPARTMENT OF MARINE.

OFFICE WORK.

Total plans for twelve months (April 1 to March 31, 1918) ..	2,171
Charts received and recorded..	118
Charts received and entered in chart books..	21
Photographs received and recorded..	198
Specifications and bills of material written..	100
Notices to Mariners issued (comprising 293 subjects).. . .	113

In addition to the work of this branch, the staff has been called upon to perform work for other branches of the service. For the Meteorological Service a 60-foot steel skeleton tower was erected at Cabot head, Georgian bay, for storm signal purposes.

PUBLICATIONS.

During the fiscal year 113 notices to mariners, covering 293 subjects, were issued. No attempt is made to cover completely waters outside the Dominion of Canada, but items containing information likely to be of service to Canadian shipping are always welcomed, and any external information specially sent to the department is invariably published. Within the Dominion, beside the activities coming under the immediate control of this department, such as new aids to navigation and changes in existing aids, which are regularly and promptly included in notices to mariners, a large number of items furnished by the Department of Naval Service, including twelve embodying regulations necessitated by the continuance of the war, has been published, and numerous other items include thirteen descriptions of channels dredged by the Department of Public Works; six items relating to wrecks; descriptions of uncharted dangers, and hydrographic notes resulting from surveys and inspections. Work done by the Hydrographic branch of the Naval Service Department has furnished numerous valuable details of uncharted dangers and general information for the correction of coast pilots.

The three volumes of the "List of Lights and Fog Signals" are annually kept up to date. A very large reduction has been made in the number of copies of each volume printed this year, but extra pains will be taken to place them where they will be of most use.

PERSONAL INSPECTION.

As is becoming more generally the practice the chief engineer and the assistant chief engineer made frequent trips of inspection during the past fiscal year, especially in connection with works of construction.

REMOVAL OF OBSTRUCTIONS.

During the past twelve months the following work has been done under the annual appropriation for the removal of wrecks and obstructions to navigation:—

		\$	cts.
Pictou Harbour, N. S....	The following wrecks were removed by departmental diver : <i>Redento, J. Millard, Stanley and Cyrene</i>	549	79
New Carlisle, P. Q.....	The schooner <i>Hattie C.</i> was removed by F. Blais, under contract.	148	00
Caughnawaga, P. Q.....	Barge <i>Charland</i> was removed by the Department of Public Works	532	00
Three Rivers, P. Q.....	Ferry boat <i>Glacial</i> moved to a place where it is not an ob- struction to navigation by Capt. J. D. Weir, Montreal agency.		
Simcoe Island, Ont.....	Schooner <i>Geo. A. Marsh</i> sank west of Simcoe island. The masts which were a menace to navigation were removed by the departmental diver.....	117	57
Collingwood, Ont.	SS. <i>Germanic</i> , which was destroyed by fire and caused an obstruc- tion, was removed by the owners, the Northern Navigation Company.		
Sarnia, Ont... ..	The scow sunk in harbour removed by the owner, W. A. Brown.		
Windsor, Ont... ..	Wreck of <i>John Plankinton</i> removed under contract by F. J. Trotter.....	5,900	00
	A number of small expenditures, such as buoying wrecks, adver- tising and incidental expenses, were incurred, making the total expended this year under this vote.....	7,719	30

MAINTENANCE AND REPAIRS TO WHARVES.

Large repairs are undertaken by the Department of Public Works. This branch attends to minor repairs. During the past year \$10,019.49 has been expended. The following is a list by provinces:—

Nova Scotia... ..	\$ 104 47	Montreal district.	1,210 26
New Brunswick.	5,561 05	Ontario.	985 01
Prince Edward Island. . .	97 81	Quebec.	1,646 67
General account.	414 22	British Columbia.	nil.

ICE-BREAKING.

1. A three-year contract with the Canadian Towing and Wrecking Company, Limited, of Port Arthur, to keep the harbours at the head of lake Superior open for navigation until December 17 in each year, and to open them in the spring, as soon as the canal at Sault Ste. Marie is open for navigation, and under this contract the harbours of Port Arthur, Fort William, and West Fort William were opened in the spring of 1917 in good time.
2. The usual contribution of \$300 was made towards keeping open the St. Croix river in the vicinity of St. Stephen. The annual cost of this work is in the neighbour-
hood of \$1,000, and the department of late years has contributed \$300 a year towards this, the remainder being made up locally.

SESSIONAL PAPER No. 21

NOVA SCOTIA.

NEW AIDS TO NAVIGATION.

Name of Light Station.	Nature of Work.	Expenditure during Fiscal Year.
		\$ cts.
Bedford Narrows.....	Erection of range pole lights, with sheds at base, with headlight lanterns having 18-inch reflectors	680 86

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Brier Island.....	Installation of an electric plant.....	287 65
Cape Fourchu.	Steam fog-alarm plant converted into an oil plant by the installation of 15-h.p. engines and compressors, and type "F" diaphone.....	739 18
Cape Freels.....	Improvement to water supply for fog-alarm plant by caulking with oakum the two dams.....	70 00
Cape Race	Repairs to station.....	805 48
Cape Roseway	Installation of apparatus ; preliminary expenses.....	100 25
Cape Sable.....	Completion of installation of an oil plant started last year.....	771 84
Cape St. Mary	Erection of mast and shed ; installation of No. 3 tubular lamp..	372 62
Cap Rond.. ..	Repairs to protection work	3,448 34
Cheticamp.. ..	Expenses <i>re</i> searching title to site.....	23 08
Church Point.....	Outstanding accounts in connection with repairs to tower.	20 00
Dartmouth.....	Provision and erection of 3-section steel skeleton tower for back light of inner range, and installation of Duplex lamp and 36-inch reflector.....	336 15
	Improvements to departmental property.....	1,863 50
Digby Gut.....	Planting posts, hanging gate, etc.....	15 00
Egg Island.....	Installation of 3rd order quick flashing apparatus.	7,856 58
Flat Point.....	Repairs to protection work	1,434 06
Glace Bay	Salvaging front range light building.....	173 20
George Island.	Erection of concrete tower, brick dwelling, installation of fog bell, and 8-foot cast-iron lantern with 270 4th order lens....	2,750 35
Hobson Island	Repairs to cribwork	2,718 98
Ile Haute.....	Building breakwater.....	311 86
Little Hope.....	Repairs to keeper's dwelling and boathouse.	403 01
Lockeport	Provision and installation of duplicate 1½-inch diaphone.....	7,473 62
Louisburg	Installation of a modern oil plant. Work started last year ..	319 04
Mary Joseph.	Repairs to boatslip.....	298 78
Mauger Beach.....	Repairs to breakwater.	1,399 46
Mullins Point.....	Repairs to front light	789 01
North Canso.. ..	Installation of Reliance clock.....	255 48
Pictou Bar.....	Repairs to breakwater.....	157 30
Port Greville	Erection of pole light, and provision of skiff.....	358 77
Sable Island.. ..	Provision and erection of 90-foot steel skeleton tower, and installation of illuminating apparatus.....	11,926 22
St. Esprit	Provision and installation of triple flash reflector.....	1,453 12
St. Paul Island	Completion of dwelling	53 85
Seal Island.....	Replacement of steam fog-alarm plant by an oil plant. Will be completed next year.....	101 85
Ship Harbour.....	Building an extension to lightkeeper's dwelling..	755 95
Wedge Island.....	Repairs to breakwater and groynes.....	1,175 99
Whitehead Island.....	Illuminating apparatus improved by the installation of 3-sector Cote reflector	1,721 45
	Alterations to cistern of dwelling, etc..	47 00
	Construction of solid concrete breakwater to protect the fog-alarm building	1,146 86
White Point (Cape North)	Erection of mast and shed.....	426 07
White Point.....	Repairs to road leading to Government wharf..	20 00
Miscellaneous expenses..	Materials, etc., in connection with the establishment of buoys, etc.	4,768 48
	Travelling expenses of officials, telegrams, salaries of foreman, etc.	3,076 30
	Total expenditure for Nova Scotia.....	62,905 59

NEW BRUNSWICK.
NEW AIDS TO NAVIGATION.

Name of Light Station.	Nature of Work.	Expenditure during Fiscal Year.
		\$ cts.
Cape Tormentine	Erection of wooden range-light towers. Work started last year..	700 80
Shemogue	Erection of two mast lights and shelter sheds.....	608 74
Bathurst.....	Erection of range lights	1,361 21
Bu touche.....	Old back light tower moved to near the back tower and converted into an oil shed.....	30 00
	Range lights moved to mark centre of line of dredged channel ..	846 55
Cape Enrage	Installation of modern diaphone plant.....	3,304 01
	Repairs to road leading to fog alarm.	194 25
Cape Tormentine	Front range mast replaced by a steel skeleton tower, and installation of 4th order lens.....	1,287 79
Chockfish.....	Purchase of site	20 00
Cox Point.....	Erection of reinforced concrete tower.	984 61
Dog Rock.....	Repairs to spindle.....	16 36
Escuminac	Construction of a concrete protection wall.....	79 74
Gannet Rock.. ..	Repairs to concrete pillars under the highwater landing.....	428 68
	Installation of heavier fog-alarm machinery by installing 12-H.P. engines and compressors.....	4,001 82
Grindstone Island.....	Installation of a modern diaphone plant.....	1,081 68
	Repairs to generator	4 35
Kouchibouguac.....	Moving shelter shed at North beach and relocating Bar range lights.....	76 00
Lorneville	Erection of oil shed	106 10
Lower Neguac.....	Main light improved by installation of a 6th order lens.....	95 00
Negro Point.....	Repairs to lighthouse	766 81
Oak Point.....	Repairs to foundation of back range tower.. ..	113 57
Partridge Island.....	Repairs and installation of a 50-H.P. boiler from Mathias Seal Island	434 66
Point Lepreau.....	Installation of a 2½-H.P. gasoline engine and 50-feet extension to piping in well.	84 35
Richibucto.....	Erection of a shelter shed.....	120 85
St. John (Marine Depot).	Excavation of berth at new depot	4,778 50
	To place curbing, and flooring oil shed.....	519 57
St. John West	Putting water pipes leading from Union street to No. 1 extension and No. 7 shed in first-class condition.....	1,731 16
	Repairs to doors of No. 7 shed	348 17
	Making 18 new shoes, repairs to loading platform, overhauling door tracks, etc., at Nos. 14 and 15 sheds.....	486 94
	Repairs to gangways, doors, etc., at Nos. 6, 7, 14 and 15 sheds...	81 40
St. Martins.....	Erection of light on W. breakwater to replace lighthouse destroyed by storm	47 50
Southwest Wolf Island..	Installation of single flash reflector	1,314 04
Swashway.....	Erection of two skeleton steel towers, one as a renewal, and the other to replace one destroyed by a windstorm.....	3,269 02
Tiner Point.	Installation of an electric light system ..	220 63
Tongue shoal	Repairs to foundation of lighthouse.....	131 36
Miscellaneous expenses..	Materials in connection with the establishment of buoys, etc.....	470 62
	Travelling expenses of officials, telegrams, salaries of foremen, etc.	3,216 20
	Total expenditure for New Brunswick.	33,363 04

PRINCE EDWARD ISLAND.
NEW AIDS TO NAVIGATION.

Port Borden.....	Erection of range lights and the installation of 20-inch. reflectors with Duplex burners.	1,204 97
	CHANGES AND IMPROVEMENTS IN EXISTING AIDS.	
Brush wharf.....	Repairs to breastwork at back range light.....	23 00
Cape Egmont.....	Repairs to fence.....	19 22
Charlottetown (Marine wharf.)	Wire to keep teams off east side of wharf, and painting mooring posts.....	11 00
	Repairs to float.....	13 25
	Repairs to wharf	102 10

SESSIONAL PAPER No. 21

PRINCE EDWARD ISLAND.—*Continued.*

Name of Light Station.	Nature of Work.	Expenditure during Fiscal Year.
		\$ cts.
Covehead.....	Construction of two moveable range lights and boxes for lanterns.....	46 08
East point.....	Installation of a modern diaphone plant, not completed.....	426 31
Murray harbour.....	Temporary repairs to foundation of outer range light.....	20 00
Shipwreck point.....	Digging out the cellar under lighthouse and dwelling.....	20 00
Summerside.....	Cost of release of mortgage.....	20 30
".....	Piles returned to stores and credited, \$33.....	
	Total cost for Prince Edward Island	1,906 23

QUEBEC.

NEW AIDS TO NAVIGATION.

Anticosti (N. Channel)...	Erection of lighthouse and fog alarm plant at Charleton point, Table Head, and North point. Will be completed next year.	72,233 61
Escoumains.....	Provision of a hand fog-horn.....	18 30
Moisie river.....	Provision of a hand fog-horn	
Quebec bridge.....	Provision and erection of four anchor lanterns placed on the bridge.....	634 54
Bersimis.....	Installation of two standard headlight lanterns.. ..	149 90
Bird Rocks.....	Repairs to tramway and replacing groynes.....	4,485 35
Cape Anguille.....	Provision and erection of a derrick... ..	231 57
Cap au Corbeau.....	Purchase of site.....	75 00
Cape Salmon.....	Completion of the installation of diaphone plant.....	3,732 58
East Cape.....	Installation of Aga equipment	1,390 52
Egg Island	Installation of new double flash apparatus, Chanteloup clock and 35 mm burner.....	1,387 08
Flower Island.....	Outstanding account in connection with installation of apparatus.	12 35
Grand Entry.....	Erection of new pole and provision and installation of headlight lantern.....	91 55
Heath Point.....	Construction of dwelling for lightkeeper	7,104 57
Little Metis.....	Erection of fog-alarm building and installation of fog-alarm plant	9,212 69
New Carlisle	Installation of anchor lantern and hoisting gear... ..	196 45
Perce Wharf.....	Erection of mast on wharf.....	25 00
Pointe des Monts.....	Preliminary expenses in connection with new fog-alarm building and installation of fog-alarm machinery	146 57
Port Daniel.....	Erection of a 22-foot concrete tower replacing tower destroyed by fire, will be completed next year	1,690 80
Quebec (Henry Wharf)...	Repairs to wharf.....	1,386 20
Quebec Agency.....	Installation of hydrant.....	113 22
Red Islet.....	Outstanding accounts in connection with installation of reflector.	55 10
River St. John.....	Re-erection of front light and rebuilding oil shed.....	94 92
Sandy Beach.....	Repairs to pier extension.....	27 50
Thunder River.....	Outstanding account in connection with the erection of shelter shed.....	18 85
Upper Traverse.....	Repairs to pier.....	1,182 90
White Island Light Ship	Installation of boiler.....	2,243 43
Miscellaneous Expenses.	Materials, etc., in connection with buoys and beacons.....	1,072 31
	Expenses incurred in the several workshops, including wages, material, power, etc., the salaries of erectors, travelling expenses of officials, telegrams and general upkeep of agency, etc.	46,942 89
	Total expenditure for Quebec... ..	155,955 75

MONTREAL AGENCY.

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Bloody Island	Provision and installation of a 5th order lens and duplex lamp...	363 40
Cap de la Madeleine	Erection of a 4-section steel skeleton tower to increase height of back light, and front light moved to new site.	2,519 57
Gentilly.....	Provision and erection of a 6-foot cast iron lantern and 30 inch reflector to replace apparatus destroyed by fire.....	1,816 65
Grondines.....	Purchase of right-of-way.	210 00
Ile de Grace... ..	Repairs to foundation.....	286 01
Montreal Agency.....	Repairs and fittings to boats and scows used on construction work, pay and board of men, including <i>Acetylene</i> , <i>Adelard</i> , <i>Lotbinière</i> , <i>Margot</i> , <i>Quebec</i> , <i>Reserve</i> , <i>Sarah</i> , and other small scows.	16,041 78

MONTREAL AGENCY.—Continued.

Name of Light Station.	Nature of Work.	Expenditure during Fiscal Year.
		\$ cts.
St. Sulpice Course.....	Moving tower on to expropriated ground.....	18 00
	Legal expenses in connection with site.....	42 00
St. Onge	Purchase of site.....	40 00
Sorel.....	Erection of fireproof storage shed.....	246 32
Vaudreuil.....	Provision and installation of two square station lanterns.....	74 11
Miscellaneous.....	Travelling expenses of officials, salaries of foremen, telegrams, etc.....	8,837 58
	Materials, etc., in connection with the construction of buoys.....	1,909 83
	Total expenditure for Montreal Agency.....	32,405 55

ONTARIO.
NEW AIDS TO NAVIGATION.

Davieaux Island.....	Erection of a 30 foot concrete tower. Will be completed next year	6,860 08
Mission Channel.....	Erection of acetylene beacon.....	85 93
Point Abino.....	Erection of a reinforced concrete lighthouse tower and fog-alarm building combined, lightkeeper's dwelling, installation of 3rd order dioptri apparatus, and diaphone.....	37,770 65
Port Burwell.....	Erection of small fog-alarm building, provision and installation of a 1½ inch diaphone plant operated by a gas engine.....	2,083 77
Quebec Harbour.....	Agate Island, lighthouse moved to main island and used as a front light, and erection of wooden tower for back light, and installation of catoptric lights. Cost of this work is included in the expenses at Davieaux Island.	

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Amherstburg.....	Repairs to wharf.....	290 00
Battle Island.....	Application of Toxement paint to tower.....	11 94
Belleville.....	Repairs to lighthouse pier.....	157 22
Bois Blanc.....	Re-erection of boathouse.....	425 38
Brighton.....	Repairs to No. 2 lighthouse pier.....	34 29
Colchester reef.....	Repairs.....	3,128 53
Cole Shoal.....	Alterations, installation of new lantern and strength of light increased.....	896 94
	Erection of fence at back range lighthouse site.....	33 49
Devils Elbow.....	Erection of two pairs of beacons.....	39 50
Four-Mile Point.....	Snake Island, lighthouse moved to Four-Mile point, and installation of 4th order lens.....	1,606 10
Gibraltar Point.....	Provision and installation of 4th order lens.....	298 50
Gull, launch.....	Repairs to launch.....	23 35
Hope Island.....	Construction of summer kitchen and alterations to dwelling.....	268 78
Main Duck Island.....	Construction of breakwater and elevated walk.....	59 41
	Repairs to boathouse and concreted floor of oil house, etc.....	69 75
Niagara-on-the-lake.....	Repairs to cribwork, etc.....	362 92
	Outstanding accounts re installation of reflectors last year.....	103 88
Point Clark.....	Pointing stone lighthouse tower, painting same with Toxement, and repairs to lantern.....	659 35
	Plans, registration fees, etc., of site.....	26 45
	Digging drain.....	25 00
Port Maitland.....	Cost of diaphone, belting, etc., installed last year.....	126 53
Port Whitby.....	Repairs to lighthouse.....	118 00
Red Horse Rock.....	Construction of new foundation to lighthouse.....	519 68
Red Rock.....	Erection of metal chimney.....	36 02
Rondeau.....	Repairs to protection cribwork.....	156 65
Sister Rock.....	Re-construction of beacon and installation of Aga system.....	78 44
Snake Island.....	Repairs to cribwork.....	952 11
Western Islands.....	Construction of platform.....	312 77
Miscellaneous expenses.....	Repairs to scow Prescott.....	74 21
	Total expenditure for Ontario.....	57,695 42
Prescott.....	Under the system of operating the Dominion Lighthouse Depot there is a credit of \$32,752 65 in its favour, which effects all the provinces and is shown in the recapitulation by provinces at the end of this report.	

SESSIONAL PAPER No. 21

BRITISH COLUMBIA.
NEW AIDS TO NAVIGATION.

Name of Light Station.	Nature of Work.	Expenditure during Fiscal Year.
		\$ cts.
Cook Point.....	Construction of concrete beacon.....	90 03
False Reef.....	Construction of concrete beacon.....	143 00
Genoa Bay.....	Construction of concrete beacon.....	144 95
Liddle Channel (North of Brook Island).....	Construction of concrete beacon.....	113 49
Liddle Channel (East of Liddle Channel).....	Construction of concrete beacon.....	166 66
Ogden Point.....	Cost of lantern, etc., installed last year.....	41 69
Quatsino Sound.....	Construction of concrete beacons at Mist rock and Bull rock... ..	208 06

CHANGES AND IMPROVEMENTS IN EXISTING AIDS.

Birnie	The unwatched light destroyed by fire was replaced by an auto-matic acetylene beacon.....	162 97
Carr Point.....	Installation of Aga light	360 35
Egg Island.....	Erection of oil house, tool shed, hoist engine room, and repairs to hoist. Completed this year.....	90 96
Entrance Island.....	Cost of surveying land	47 25
Langara	Provision of power car, planks for track, and an aerial carriage..	825 94
Lawyer Island	Machinery for illuminating apparatus.....	1,480 89
Pine Island.....	Erection of aerial tramway, installation of engine, etc.....	795 63
Portlock Point	Construction of boatways, and building chimney... ..	168 53
Race Rocks.....	Cost of diaphone engine, etc.....	1,568 72
Shoal Point.....	Beacon carried away by towboat replaced.....	216 18
Squally Point.....	Installation of Aga system.....	357 67
Victoria Depot	Improvements to depot by construction of roads, etc.....	1,648 96
	Reinforce d concrete oil and carbide shed.....	3,849 70
	Renewing canvas deck on roof of derrick scow	168 46
Miscellaneous	Materials, etc., in connection with the establishment of buoys, etc.	9,572 21
	Salaries of foremen, travelling expenses of local officers, telegrams, etc., labour and other expenses.....	4,126 31
	Total expenditure for British Columbia.....	26,348 61

HEADQUARTERS.

Miscellaneous expenses, including travelling expenses of officers, blueprint work, unforeseen expenses, photographic work, salaries of foremen, etc.....	19,748 32
--	-----------

RECAPITULATION BY PROVINCES.

Nova Scotia.. ..	\$ 62,905 59
New Brunswick.. ..	33,363 04
Prince Edward Island.. ..	1,873 23
Quebec district.. ..	155,955 75
Montreal district.. ..	32,405 55
Ontario and Northwest.. ..	57,695 42
British Columbia.. ..	26,348 61
Headquarters.. ..	19,748 32
	\$390,295 51
Dominion Lighthouse Depot credit.. ..	32,752 65
Grand total expended.. ..	\$357,542 86

APPENDIX No. 2.

REPORT OF THE COMMISSIONER OF LIGHTS.

The principal work performed has been, an extension of the buoy and beacon services, together with the maintenance of lights and other aids to navigation throughout the Dominion, and the maintenance and inspection of public wharves under the control of the Department of Marine and Fisheries. The operations of this branch are set forth in tabular form in two inclosures.

In former reports it had been my habit to add further inclosures giving the names of lightstations and lightkeepers, a complete list of stations at which gas buoys were maintained, new establishments of gas and signal buoys, withdrawals, and a statement giving complete list of stations at which submarine bells were maintained. As this information is already contained in other government publications it is not repeated here.

INCLOSURE No. 1.—Statement, by districts, showing the number of lights of the several orders, lightships, lightboats, lightkeepers, fog signals, buoys, submarine bells, etc.

	1st Order Lights.	2nd Order Lights.	3rd Order Lights.	4th Order Lights.	5th Order Lights.	6th Order Lights	7th Order Lights.	Gas Beacons.	Pressed Lens Lights and other minor types.	Catoptric Lights.	Electric Lights.	Total.	Lightships.	Lightboats.	Lightkeepers.	Diaphones.	Fog Guns and Bombs.	Fog Horns and Trumpets.	Fog Whistles.	Sirens.
New Brunswick	2	4	21	14	19	58	2	16	42	4	182	1	1	150	15	....	1	1	..	
Nova Scotia	3	5	12	52	28	31	68	..	26	75	13	313	2	..	290	23	1	1	4	..
Prince Edward Island. .	..	..	..	14	2	2	8	..	4	52	1	83	..	..	52	2	1	....	..	..
Quebec	5	7	15	22	6	16	42	5	18	89	10	235	4	..	185	27	6	....	4	1
Hudson Bay and Strait..	..	..	..	..	..	..	..	10	..	..	..	10	..	..	..	..	..	..	..	..
Montreal .....	..	..	..	9	12	7	18	6	34	145	5	236	..	..	160	..	..	..	..	..
Prescott .....	..	..	3	16	5	6	18	20	8	9	3	88	..	..	48	10	..	..	..	..
Parry Sound.....	..	5	9	21	14	14	51	27	34	66	20	261	1	..	148	23	..	1	2	1
Kenora.....	..	..	..	..	..	..	3	..	2	2	2	9	..	..	6	..	..	..	..	..
Manitoba.....	..	..	..	2	3	..	4	..	1	5	1	16	..	..	10	..	..	..	..	..
British Columbia.....	5	1	5	12	8	2	18	58	10	7	16	142	1	..	79	24	..	..	..	..
Total.	13	20	48	169	92	97	288	128	153	492	75	1,575	9	1	1,128	124	8	3	11	2

	Fog Bells.	Hand Fog Horns.	Hand Fog Bells.	Total Fog Signals.	Fog Signal Stations only.	Gas Buoys.	Gas and Whistling Buoys.	Gas and Bell Buoys.	Whistling Buoys.	Bell Buoys.	Submarine Bell Buoys.	Total Gas and Signal Buoys.	Lightship Submarine Bells.	Total Submarine Bells.	Lighted Spar Buoys, Floats and Dolphins.	Unlighted Buoys.	Stakes and Bushes.	Unlighted Dolphins, Spindles and Beacons.
New Brunswick.....	5	18	..	40	4	14	11	2	9	28	4	68	1	5	....	828	1,469	14
Nova Scotia	7	56	..	92	4	6	21	11	16	45	5	104	1	6	....	1,326	139	45
Prince Edward Island .	..	2	..	5	..	1	5	..	5	7	..	18	..	..	....	401	401	5
Quebec .....	..	24	4	6	1	64	..	7	..	1	2	74	3	5	1	188	125	18
Hudson Bay and Strait	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Montreal ..	..	..	..	..	..	88	..	..	..	..	..	88	..	..	1	527	180	128
Prescott ...	3	6	1	20	..	36	..	1	..	1	..	38	..	..	58	538	..	4
Parry Sound.....	3	36	..	66	..	36	4	8	..	2	..	50	1	1	28	564	39	36
Kenora.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	365	..	..
Manitoba.....	..	4	..	4	..	..	..	..	..	..	..	..	..	..	..	25	..	..
British Columbia	12	8	..	41	4	3	11	5	1	3	..	24	1	1	14	221	..	118
Total.....	30	154	5	337	13	248	52	34	32	87	11	464	7	18	102	4,933	2,353	368

SESSIONAL PAPER No. 21

ENCLOSURE No. 2.—Statement, by localities, giving the number of unlighted buoys, stakes, bushes, dolphins, spindles and beacons maintained throughout the Dominion during the fiscal year ended March 31, 1918.

NEW BRUNSWICK.

Locality and number of stakes, bushes, etc.	No. of Buoys.	Locality and number of stakes, bushes, etc.	No. of Buoys.
Aldouane, 42 bushes.....	5	Magaguadavic.....	13
Alma	3	Maquapit and French lakes, 57 stakes	13
Avon river (Nova Scotia).....	5	Minudie (Nova Scotia).	1
Baie du Vin, 8 bushes.....	12	Miramichi bay and river, 12 bushes	35
Baie Verte and Port Elgin, 30 stakes..	6	Miramichi river, Grandoon channel.....	20
Bartibog and Black rivers, 12 bushes	1	Miramichi, river, northwest branch.....	14
Bathurst	8	Miramichi river, southwest branch.....	9
Beaver harbour.....	4	Miscou.....	8
Black Brook, Miramichi river.....	3	Musquash.....	7
Blacks harbour.....	3	Napan river, 24 stakes.....	3
Bliss Island	1	Neguac.....	19
Buctouche, 34 stakes	22	Old Man rock (Nova Scotia).....	1
Buctouche river, 260 bushes .....	.....	Old Woman rock (Nova Scotia).....	1
Campobello.....	10	Owl head (Nova Scotia).....	1
Caraquet.....	16	Pea point.....	1
Caraquet to Maisonnnette.....	3	Peases island (Nova Scotia).....	1
Chamcook Harbour entrance.....	1	Petitcodiac river.....	8
Chance Harbour.....	3	Petit Rocher	1
Chebogue (Nova Scotia).....	1	Pokemouche, bushes.....	6
Clarke Harbour (Nova Scotia).....	1	Quace.....	1
Cocagne, 30 stakes.....	11	Richibucto.....	38
Cumberland basin (Nova Scotia)	1	Richibucto, Rexton and Browns yard.....	30
Dalhousie and Restigouche.....	10	Roaring Bull rock (Nova Scotia).....	1
Deadmans.....	1	Robinsons Ball station, Wood harbour (Nova Scotia).....	2
Digby and Annapolis river and Bear river (Nova Scotia).....	16	St. Andrews, 3 stakes.....	19
Didgequash.....	6	St. Charles river, 60 bushes.....	.....
Dipper Harbour.....	4	St. John harbour.....	2
Dochet Island, St. Croix river.....	1	St. John river, 154 stakes.....	79
Dorchester.....	3	St. Louis, 70 bushes	9
Grande Anse.....	4	St. Louis river, 54 bushes and stakes .....	.....
Grandigue, 30 stakes, 20 bushes.....	2	St. Simon bay, 15 bushes	6
Grand lake, bushes.....	32	Salmon river, bushing.....	15
Grand Manan, 9 spindles.....	27	Schooner rock (Nova Scotia).....	1
Grassy Island, St. John river, 18 stakes....	7	Scotchtown.....	6
Great Shemogue	7	Shampers wharf, 15 bushes.....	2
Gull ledges (Nova Scotia).....	1	Shediac.....	19
Hatfield point, St. John river, bushes.....	1	Shippigan, 27 pickets, 30 stakes, 1 beacon..	27
Huckleberry gully, 28 bushes.....	4	Stay point, Lepreau river.....	1
Indian point bar channel, Grand lake, 10 bushes.....	3	Tabusintac.....	20
John ledge (Nova Scotia)	1	Tracadie, north gully, 100 bushes ...	12
Kouchibouguac and Black Lands gully, 150 bushes.....	14	Tracadie, south gully, 30 bushes.....	5
Letite, L'Etang and Bliss harbour.....	17	Tynemouth creek.....	4
Little Shemogue, 2 poles.....	5	Washadamoak lake, 144 bushes	2
Little Shippigan.....	4	Waweig river	2
Lorneville.....	1	West isles, 4 spindles	23
		Yarmouth (Nova Scotia).....	9

NOVA SCOTIA DISTRICT.

Advocate harbour.....	9	Big Lorraine.....	3
Amherst basin.....	4	Birchtown.....	5
Apple river.....	8	Blandford.....	5
Ardoise	5	Boulaceet, Gillies point.....	1
Argyle river and sound.....	10	Bridgewater.....	6
Arichat.....	19	Brulé	9
Barrington, 11 dolphins.....	44	Calf Island bay ..	5
Bayside, Shag bay.....	4	Canso and St. Andrews passage, 20 winter buoys.....	31
Bear river.....	7	Cape Negro and Northeast harbour.....	17
Beaver harbour	9	Caribou	6
Beaver island.....	1	Chester and Gold river	28
Beaver narrows, C.B.....	2		

STATEMENT, by localities, giving the number of unlighted buoys, etc.—Continued.

NOVA SCOTIA DISTRICT.—Continued.

Locality and number of stakes, bushes, etc.	No. of Buoys.	Locality and number of stakes, bushes, etc.	No. of Buoys.
Cheticamp	14	McVarish shoal and Campbell point, Bras d'Or	4
Chezzetcook and Petpeswick	11	Merigomish, bushes	6
Christmas island and Barra strait	11	Middle ledge or South Easter, 1 winter buoy	1
Clark's harbour	17	Monsellier, 4 stakes	6
Clyde river	5	Musquodoboit	15
Cockerwitt pass and Woods harbour	19	Neil harbour	1
Coddle harbour	6	New harbour, 1 winter spar	12
Cooks cove (Toby cove)	4	Northport	3
Country harbour	1	Orangedale	1
Crooked channel	5	Orpheus, off Green island	6
Crow harbour	3	Parrsboro	11
Denny river	3	Pennant harbour	18
D'Escousse and Lennox passage	29	Petitdegrat, 6 winter buoys	1
Deveaux shoal, off Betty island	1	Pollock shoal, off West Ironbound island	4
Dover	5	Pope harbour	5
East bay, Bras d'Or	5	Port Bickerton, 3 winter buoys	11
East Dover	3	Port Felix, 1 stake	5
Eskasoni	6	Port Hood, 2 winter buoys	17
Fourchu harbour	15	Port Latour	13
Freeport, 1 beacon	3	Port Hebert	6
Gegoggin	7	Port Medway	1
Glace bay	4	Port Morien	9
Goose bay, 35 stakes	8	Port Mouton	2
Grand Etang	4	Pringle harbour	10
Great Bras d'Or	7	Prospect, lower	4
Guysborough	5	Prospect, upper	21
Habitants bay	5	Pubnico	8
Halifax	16	Pugwash	1
Harbour island	1	Ram rock, Jordan bay	6
Harrigan cove	3	River Bourgeois	3
Hautford shoal, off cape Hogan	1	River John, stakes	6
Havre Bouche, 6 stakes	4	River Phillip	6
Indian harbour	4	Rose bay, lower	5
Ingonish, South bay	9	Roseway	12
Isaac harbour, 9 winter buoys	13	St. Ann	6
Jeddore, winter buoys	11	St. Margaret bay	11
Johnson harbour	5	St. Mary river, winter buoys	18
Ketch harbour	6	St. Mary river to Sherbrooke	16
Kieley cove, Blind bay	4	St. Peter bay, 4 winter buoys	12
Lahave	5	St. Peter inlet	29
Lahave river	5	Sambro	8
Larry river, 7 stakes	3	Shad bay	17
Liscomb, winter spars	7	Shag harbour	9
Little Bras d'Or	12	Sheet harbour, 5 winter buoys	9
Little Dover	9	Shelburne	11
Little Liscomb	4	Shulee	8
Little Narrows	10	Ship harbour, lower, 6 winter buoys	1
Liverpool	10	Slaughenwhite ledge, Hubbard cove	1
Lockeport	14	Smith island, west bay	22
Loirembec (Little Lorraine)	5	Sober island to Ecum Secum	6
Louisbourg, 6 winter buoys	8	Spiy bay	1
Lunenburg	8	Stoney island, Baddeck	5
Lunenburg, back cove	9	Strait of Canso	6
Lunenburg, middle south, 6 winter buoys	16	Sydney harbour	3
Mabou, stakes	20	Tancook island	7
Mahone bay	13	Tangier, 7 winter buoys	18
Mainadieu	5	Tatamagouche, 46 stakes	3
Marble mountain	5	Terence bay	6
Margaree harbour, 7 stakes	2	Three Fathom harbour	5
Marie Joseph and Ecum Secum, 11 winter buoys	16	Tidnish, stakes	21
Martin's brook	6	Tor bay	9
McKinnon harbour	6	Tusket river	17
McNab cove	2	Tusket Wedge, 3 spindles	

SESSIONAL PAPER No. 21

STATEMENT, by localities, giving the number of unlighted buoys, etc.—*Continued.*NOVA SCOTIA DISTRICT.—*Concluded.*

Locality and number of stakes, bushes, etc.	No. of Buoys.	Locality and number of stakes, bushes, etc.	No. of Buoys.
Voglers cove.....	3	West Dublin.....	12
Walkerville.....	3	Weymouth.....	19
Wallace, 33 stakes.....	11	Whitehaven, 5 winter buoys.....	8
Walton harbour.....	1	Whitehead island, 1 winter spar.....	4
Washaback river.....	7	Whycocomagh.....	.....
West bay.....	5	Yarmouth, 30 dolphins.....	.....
West Chezzetcook.....	7		

PRINCE EDWARD ISLAND DISTRICT.

Alberton.....	1	Little channel.....	3
Amherst Harbour (Magdalen islands).....	8	Malpeque, 2 stakes.....	25
Bay Fortune.....	3	Miminegash.....	6
Beach point.....	3	Miscouche.....	2
Belle river.....	3	Montague, 10 stakes.....	7
Boughton or Grand river, 72 bush stakes, 1 beacon.....	12	Murray harbour and rivers, 25 stakes, 1 winter spar.....	35
Brae harbour.....	5	Mullens shoal, Grindstone island (Mag- dalen islands).....	1
Brudenell river.....	5	New London, French river, 15 stakes.....	8
Cape Bear.....	1	North river, 14 stakes.....	3
Cape Sharp.....	1	Orwell and Vernon river, 36 bushes, 4 beacons.....	3
Cardigan, Lower, 2 winter buoys.....	8	Pictou (Nova Scotia).....	6
Cardigan, Upper.....	20	Pinette, 24 bushes.....	8
Cascumpeque, 13 stakes.....	16	Pointe du Chene (New Brunswick).....	1
Charlottetown.....	15	Point Prim.....	1
Covehead.....	3	Port Hill.....	12
Crapaud, stakes.....	7	Pownal, 10 stakes.....	9
East river, 15 stakes, 8 bushes.....	14	Rifleman reef.....	1
Egmont bay, north, 19 stakes.....	9	Rollo bay.....	3
Egmont bay, south, 13 stakes.....	3	Rustico, 30 stakes.....	6
Entry island and Amherst island passage (Magdalen islands).....	7	St. Peter harbour, 6 stakes.....	5
Georgetown, 6 winter spars.....	21	Sandy Hook (Magdalen islands).....	1
Goose and Palmer harbours.....	5	Savage harbour.....	2
Grand Entry (Magdalen islands).....	17	Souris.....	4
Grand river, off Cape Sixteen, Malpeque bay.....	8	Stanley and Bayfield channel, Southwest river—Clifton bridge, 14 stakes.....	9
Grand Tracadie.....	4	Summerside, 10 stakes.....	10
Great Shemogue (New Brunswick).....	2	West point.....	2
House Harbour (Magdalen islands).....	11	West river, 65 stakes.....	8
Jouriman reef (New Brunswick).....	1	Wood islands.....	4
Jouriman shoal (New Brunswick).....	2		

QUEBEC DISTRICT.

Anse a Beaufile.....	1	Lake St. John, Mistassini river, 60 bushes.....	12
Anse aux Gascons.....	1	Lake St. John, Peribonka river and Rober- val, 35 bushes.....	16
Barachois de Malbaie.....	1	Little river east.....	1
Beaudry shoal, Gaspé basin.....	1	Little river west.....	1
Beauport.....	3	Maria.....	2
Bonaventure.....	11	Matane.....	2
Cap Chat.....	1	Moisie river.....	2
Cape Cove.....	1	Nanashkwan.....	4
Cape d'Espoir.....	1	New Richmond.....	3
Carleton point.....	1	Nouvelle roads.....	2
Echourie rock (Serpent reef).....	1	Paspebiac.....	1
Fox river.....	1	Pentecost.....	1
Gaspé.....	6	Perce.....	2
Gros-cap-aux-Os.....	1	Point St. Peter.....	1
Lake St. John, Ashuapmucuan river, 30 bushes.....	7	Port Daniel.....	1

9 GEORGE V, A. 1919

STATEMENT, by localities, giving the number of unlighted buoys, etc.—Continued.

QUEBEC DISTRICT.—Continued.

Locality and Number of Stakes, bushes, etc.	No. of Buoys.	Locality and Number of Stakes, Bushes, etc.	No. of Buoys.
Portneuf-en-bas.....	9	St. Godfroy.....	1
Restigouche river	12	St. Michel de Bellechasse.....	4
River St. Lawrence, 10 beacons, 8 spindles, 6 winter buoys.....	31	St. Thomas de Montmagny.....	8
Ste. Anne river.....	1	Saguenay river, vicinity of Chicoutimi.....	33

MONTREAL DISTRICT.

Lake Memphramagog.....	1	St. Maurice river, Grandes Piles to La- tuque, 106-day beacons.....	74
Ottawa river district.....	85	Yamachiche river, 30 balises and 4-day beacons.....	
Richelieu rapids, bushes		Yamaska river, 60 balises and 6-day beacons.....	
Richelieu river, above St. Johns.	29		
Richelieu river, Sorel to Chambly.....	37		
River St. Lawrence, 10 balises	290		
Riviere des Prairies	11		
St. Francis river, 80 balises and 12-day beacons.....			

PRESCOTT DISTRICT.

Bay of Quinte.....	17	River St. Lawrence, 4 beacons	81
Kingston, lake Ontario.....	12	Telegraph narrows, bay of Quinte.....	8
Lake Ontario, N.S. of Snake island light.	1	Trent canal (maintained for this Depart- ment by Department of Railways and Canals)	317
" " of Long point, Wolfe island.	1	Trenton, bay of Quinte.....	16
" " E. of Presqu'ile light.....	1	Whitby, lake Ontario.....	5
Lake St. Francis.....	33		
Murray canal and Presqu'ile bay	22		
Napanee river.....	17		
Picton harbour, Bay of Quinte ...	7		

PARRY SOUND DISTRICT.

Blind river.....	6	Mutton island, lake Superior	2
Burke shoal, lake Superior.....	1	Owen Sound channel, Georgian bay.....	4
Byng Inlet channel, Georgian bay, 6 beacons	27	Parry Sound channel, 2 beacons.....	20
Cache bay, lake Nipissing, 8 stakes		Parry Sound to Penetanguishene (Minni- coganeshene channel).....	37
Cape Hurd, lake Huron.....	3	Pembroke.....	29
Clapperton channel, 1 beacon.....	8	Penetanguishene.....	12
Cloud bay, lake Superior.....	2	Pointe au Baril, 15 beacons.....	3
Collingwood	13	Port Arthur.....	17
Detroit river.....	30	Port Rowan.....	10
Goderich.....	7	Port Severn, Georgian bay	14
Grand reef, lake Superior.	1	River Thames.....	7
Honey harbour.....	15	Rondeau.....	6
Kaministikwia river, Fort William, lake Superior.....	15	St. Clair river, Chenal Ecarte.....	1
Key harbour, Georgian bay	24	St. Joseph channel, lake Huron, 1 beacon, 5 winter buoys.....	25
Key Inlet channel, Georgian bay, 6 beacons		Sault Ste. Marie, canal approaches.....	32
Killarney harbour, Georgian bay.....	3	Silver islet, lake Superior.....	2
Lake Couchiching and narrows, 11 bushes..	8	Southampton.....	7
Lake Huron and Georgian bay.....	22	South Baymouth.....	4
Lake Simcoe.....	5	Stokes bay.....	6
Lake Superior, southeastern part.	7	Sturgeon river, 20 stakes	16
Lionhead harbour, Georgian bay.	1	Victoria island, lake Superior.....	3
Little Current.....	27	Waubauskene.....	53
Meaford, Georgian bay	3	Wabuno channel, 3 beacons.....	5
Michipicoten.....	6	Wingfield basin, Georgian bay	4
Mud lake, river St. Mary, 2 beacons.....	11		

SESSIONAL PAPER No. 21

STATEMENT, by localities, giving the number of unlighted buoys, etc.—Continued.

KENORA DISTRICT.

Locality and Number of Stakes, Bushes, etc.	No. of Buoys.
Maintained by Agency.....	365

MANITOBA DISTRICT.

Locality and Number of Stakes, Bushes, Etc.	No. of Buoys.	Locality and Number of Stakes, Bushes, Etc.	No. of Buoys.
Black river.....	6	Warren landing.....	12
Red river..	7		

BRITISH COLUMBIA DISTRICT.

Alberni, Somass river, 4 beacons		Malaspina strait, 3 beacons... ..	2
Alberni canal, 1 beacon.....		Masset sound, 1 beacon.....	
Arrow lakes, Upper and Lower.....	16	Metlakatla harbour.....	5
Barkley sound, 1 beacon.....	1	Mud bay, Serpentine and Nicomeck'l rivers,	
Baynes sound, 1 beacon.....	7	27 beacons	
Bloxam shoal, entrance Telegraph passage..	1	Nanaimo harbour, 1 beacon.....	12
Boat harbour.....	2	Neill ledge, Broughton strait	1
Burrard inlet, 3 beacons.....	5	Observatory inlet, 2 beacons.....	3
Celia reef, Shute passage.....	1	Okisollo channel, 3 beacons.....	
Chatham sound, 1 beacon.....	4	Oyster harbour, 1 beacon.....	1
Clayoquot sound, 3 beacons.....	12	Pender harbour, 1 beacon.....	
Coal harbour.....	7	Pender island canal.....	2
Colburne passage.....	2	Pitt river.....	9
Courtenay river, 12 beacons.....		Porlier pass, 2 beacons.....	
Departure bay.....	1	Porpoise harbour.....	6
Dorcas rock, Ballenas channel.....	1	Portland canal.....	4
Enterprise reef, southern approach Active		Port Simpson.....	3
pass, 1 beacon.....		Prince Rupert harbour, 1 beacon....	2
Esquimalt harbour, 1 beacon.....	4	Quatsino sound, 2 beacons.....	1
False narrows, Northumberland channel...	2	Saanich inlet, 3 beacons.....	2
Fort point, Nass bay, 1 beacon.....		Satellite channel, 1 beacon	1
Fraser river.....	30	Seaforth channel, 3 beacons.	
Ganges harbour.....	2	Sidney channel, 1 beacon.	6
Gibson Landing, Shoal channel, 1 beacon..		Skeena river, 5 beacons... ..	2
Goletas channel, 1 beacon.....		Skidegate channel, 3 beacons.....	
Grappler reef, Houston passage.....	1	Skidegate inlet.....	1
Grenville channel, 3 beacons		South Thompson river, 4 day beacons.....	18
Haro strait, 1 beacon.....	2	Strait of Georgia, 2 beacons.....	5
Hankin rock, Fortune channel	1	Strait of Juan de Fuca . . .	1
Hornby island, Lambert channel.....	1	Stuart channel, 3 beacons....	2
Joan rock, Prevost passage	1	Sutil channel, 1 beacon.....	2
Johnstone strait, 4 beacons.....	2	Tolmie channel, 1 beacon.....	
Kootenay lake.....	7	Trincomali channel, 2 beacons.	3
Kootenay lake, northwest arm	11	Victoria harbour, 2 beacons.....	
Kuakume island, Fitzhugh sound, 1 beacon		Walbran rock, Fisher channel.....	1
Kyuquot sound.....	1	Welcome pass.....	1
Lama passage, 3 beacons			

APPENDIX Ng. 3.

RIVER ST. LAWRENCE SHIP CHANNEL.

REPORT OF V. W. FORNERET, B.A. Sc., SUPERINTENDING ENGINEER.

GENERAL INFORMATION.

The ship channel of the river St. Lawrence between Montreal and Father Point, has a total length of 340 statute miles.

The contracted part of the river, which may be properly called "Ship Channel" commences at "The Traverse" to which point from Montreal, the distance is 220 miles. This is divided into five divisions as follows:—

	Statute miles.
Division 1—Montreal to Sorel.. . . .	45
" 2—Sorel to Batiscan (does not include lake St. Peter).. ..	36
" 3—Lake St. Peter.. . . .	20
" 4—Batiscan to Quebec.. . . .	59
" 5—Quebec to the Traverse.. . . .	60
Total.. . . .	220

Owing to existing conditions, it was decided to reduce the dredging operations considerably during the season of 1917. Only eleven dredges and attending plant were placed in commission, compared with fifteen last season, to deepen and improve the ship channel. It was also decided to operate them with day crews only, instead of working 24 hours per day as formerly. This naturally made a great difference with the results obtained during the season, as compared with other seasons.

The total amount of material removed by the reduced fleet during the season of 1917, amounted to 2,517,376 cubic yards, varying from soft clay to very hard shale rock.

DIVISION 1—MONTREAL TO SOREL.

Longue Pointe Curve.—Some progress was made on the widening of this curve. It is proposed to increase the present width of 500 feet to 650 and deepen it to 35 feet at E.L.W.; the dredged material being hard-pan. Total number of cubic yards dredged was 8,250.

Pointe aux Trembles Channel.—Considerable work was done on this channel on the deepening to 35 feet at E.L.W. Only 500 feet for half the width of the channel remains to be done to complete it. The material removed consists mostly of shale rock and some clay. Total number of cubic yards dredged was 67,575.

Varennnes Curve.—Only one dredge was placed to work for a short time on this curve, deepening to 35 feet at E.L.W. Material to be dredged being clay. Total number of cubic yards removed was 38,420.

Cap St. Michel to Vercheres Channel.—Good progress was made on this channel with the deepening to 35 feet at E.L.W. Had the dredges worked day and night as formerly, this channel would have been completed to 35 feet at E.L.W. There only remains 1,900 feet for half the width of the channel, yet to be done; material dredged being clay. Number of cubic yards removed was 345,100.

SESSIONAL PAPER No. 21

Vercheres Tráverse.—One dredge was employed for a short period on this part of the channel on the 35-foot deepening project and some progress made. Material, clay. Total number of cubic yards removed was 24,325.

Vercheres to Contrecoeur Channel.—Good progress was made on this channel with the deepening to 35 feet at E.L.W.; one dredge being employed all season; dredged material being clay. The total number of cubic yards removed was 366,775.

Contrecoeur Channel.—One dredge was employed on this channel all season, on the 35-foot deepening project. She worked at the commencement of the season on the "Petite traverse" for about a month, and the remainder of the season on Contrecoeur traverse. Total number of cubic yards removed was 156,000; the material being clay.

Repentigny Steamboat Channel.—A dredge was placed to clean up several lumps found with the testing scow at the lower end of the curve at the junction of Repentigny and Ile Lebel ranges, in order to take full advantage of the widened curve, which is now 700 feet in width. This channel is being used more every year, and consequently relieves the main ship channel of so much traffic and renders it safer. The total amount dredged, season of 1917, amounted to 10,000 cubic yards, the material being clay and stones.

Approach Channel to Imperial Oil Co's. Wharf, Pointe aux Trembles.—When this wharf was built by the Montreal Harbour Commissioners, it was constructed for 28 feet at low water, which depth is available at the wharf. It was found, however, that the depth of water from the main ship channel to this wharf was not more than 24 or 25 feet at E.L.W. Owing to the many inquiries and the large ships going to this wharf to take oil for overseas, practically every transport visiting Montreal harbour being required to take oil on her outward voyage, it was urgent that a channel approach be dredged to this wharf for these ships.

The Montreal Harbour Commissioners, not having the proper equipment to carry out this work, applied to the Department of Marine for the use of one of the ship channel elevator dredges and attending plant. As this work was very urgent, the department agreed to let the commissioners have the loan of a dredge. Work was commenced on September 4, dredging a channel 500 feet in width and 28½ feet at E.L.W. in depth. On November 27 work had to stop on account of ice. There remains only about a week's work to complete the channel, which it is proposed to do next season. The total number of cubic yards dredged amounted to 49,275; the material being clay and stones.

DIVISION 2—SOREL TO BATISCAN (DOES NOT INCLUDE LAKE ST. PETER.)

Ile de Grace Channel.—Very good progress was made in this channel which was completed to 35 feet at E.L.W. The number of cubic yards removed amounted to 350,850, the material being clay.

Upper Stone Island Course.—A commencement was made on this part of the channel to deepen to 35 feet at E.L.W., a dredge being employed here for a few days. The number of cubic yards dredged being 2,500. Material, clay.

Champlain Channel.—One dredge was employed for part of the season in cleaning up to 30 feet at E.L.W. some sand bars which had formed in this channel. This is the only point where filling of any importance occurs in the ship channel between Montreal and Quebec. The amount of dredging done amounted to 28,400 cubic yards.

DIVISION 3.—(LAKE ST. PETER.)

No work was done in the division during the season of 1917.

DIVISION 4.—BATISCAN TO QUEBEC.

Cap à la Roche Curve.—Two powerful rock dredges and one rock cutter, one stone lifter and attending plant, were employed all season on this part of the channel. Owing to the hard nature of the material to be dredged, being solid rock with numerous boulders to be lifted, and a very strong current to contend with, progress at this point is naturally slower than other parts of the channel. Notwithstanding good progress was made. Total amount dredged during the season was 80,706 cubic yards. In addition there is a considerable area broken by the rock cutter in readiness for the dredges to commence work next season.

DIVISION 5—(QUEBEC TO THE TRAVERSE).

North Channel.—(By way of Cap Tourmente to Goose cape).—During the season of 1917, the two powerful sea-going hydraulic dredges, Nos. 8 and 9, were employed dredging in this channel and very good progress was made, although the dredges worked only during the daytime. The number of cubic yards removed by both dredges during the whole season amounted to 989,200, the material being sand, gravel, clay and stones.

The Cap à la Roche semaphore, which shows the available depth of water in the dredged channel at Cap à la Roche, was put in operation May 4, 1917, and the St. Nicholas semaphore, which shows the depth available over the undredged St. Augustin bar, also on May 4, 1917.

The usual sweeping of the ship channel was done during the season and no obstruction of a serious nature was found. Some sand bars found in Champlain channel were removed before the low water season.

The total cost from 1851 to the end of the fiscal year, March 31, 1918, of the ship channel from Montreal to Father Point, including plant, shops, surveys, etc., is as follows:—

Dredging... ..	\$14,167,914 13
Plant, shops, surveys, etc..	8,107,622 99
Total.. . . .	<hr/> \$22,275,537 12 <hr/>

The total number of cubic yards removed, amounted to 116,307,773, the material varying from very hard shale rock to soft blue clay.

RIVER ST. LAWRENCE SHIP CHANNEL BETWEEN MONTREAL AND FATHER POINT.

ACCIDENTS DURING SEASON 1917.

During the season of 1917, very few accidents occurred in the River St. Lawrence Ship Channel, between Montreal and Father Point; and none of them can be attributed to any fault of the ship channel.

Montreal to Quebec.

Barge *Katie H.*—August 3. In tow of tug *J. H. Hackett*, struck lightly transport steamer *Celia* near Pointe au Soldat at head of lake St. Peter. Barge received slight damage.

Steamer *Imperoyal.*—June 5. Collided with steamboat *Maisonneuve* in Contre-cour channel. The *Maisonneuve* sank outside of channel but was refloated

Steamer *Coniston.*—June 18. Collided with a canal barge loaded with coal at the upper end of No. 2 curve, lake St. Peter. The barge sank several hundred feet outside the channel, on the south bank.

SESSIONAL PAPER No. 21

Tug *Hudson*.—September 6. Tug *Hudson* belonging to the Sincennes McNaughton Towing Company went ashore near Baptists' island, harbour of Three Rivers, during a dense fog. Was pulled off with no damage.

Tug *Emma L.*—September 27. Tug *Emma L.*, belonging to the Sincennes McNaughton Towing Company capsized and sank in Montreal harbour while assisting to move ss. *Metagama*. The tug was immediately raised

Tug *Virginia*.—November 2. Tug *Virginia* belonging to the Sincennes McNaughton Towing Company with a tow of barges ran aground off Baptists' island, harbour of Three Rivers, north of the ship channel. Two of the canal barges sank, owing to damages received from colliding with a large barge forming part of the tow, which was aground.

MARINE SIGNAL SERVICE.

Signal stations have been established for the purpose of maintaining communication between ship and shore by means of flag signals.

This system of stations extends from St. John, N.B., Halifax, N.S., Cape Race, Nfld., and Belle Isle, up the gulf and river St. Lawrence and through the Great Lakes to Sault Ste. Marie, Ont.

FOLLOWING IS A COMPLETE LIST OF STATIONS EAST OF QUEBEC.

Name of Station.	Location.	Nautical Miles from Quebec.	Means of Communication.
R Quebec	Custom House.....	0	Telephone.
X St. Jean d'Orleans.....	Shore end of wharf....	14	"
Crane Island.....	Lighthouse.....	32	"
L'Islet.....	100 yds. east of church....	40	Telegraph.
Cape Salmon... ..	Lighthouse.....	81	Telegraph & Telephone.
Rivière du Loup	Shore end of wharf.....	92	Telegraph.
Father Point	"	157	"
Little Metis.....	Lighthouse... ..	175	"
Matane... ..	"	200	"
Pointe des Monts.....	"	219	"
Cap Chat	"	234	"
Rivière à la Marthe.. ..	"	260	"
Cape Magdalen.....	"	294	"
F Fame Point.....	"	325	"
Cap des Rosiers	"	349	"
Cap d'Espoir.....	"	377	"
Point Maquereau.....	"	400	"
West Point, Anticosti.....	"	332	"
Southwest Point, Anticosti.	"	360	"
South Point, Anticosti.....	"	415	"
F Heath Point, Anticosti.....	"	438	"
Point Escuminac, N.B.....	"	462	"
Amherst Island, Magdalen Islands.	"	481	"
St. Paul Island, C.B.....	Main Station.....	540	Telephone.
F Money Point, C.B., N.S...	Lighthouse.....	537	"
F Flat Point, N.S.....	"	575	Telegraph.
F Cape Ray, Nfld.. ..	"	553	"
Cape Race, Nfld.....	"	826	"
F Point Amour.....	"	673	Wireless Telegraph.
F Belle Isle	"	734	" "
Camperdown, N.S.....	Near Wireless Station.....	.....	Telephone.
Halifax, N.S.....	The Citadel.....	.....	"
Brier Island, N.S	Near Lighthouse .....	.....	"
Point Lepreau, N.B.....	Lighthouse .....	.....	"
Partridge Island, N.B.....	" .....	.....	"
St. John, N.B.....	Custom House.....	.....	"
Point Tupper, C.B., N.S...	Lighthouse (Gut of Canso)...	.....	"
Scutari Island, N.S... ..	Lighthouse (east end).....	.....	"

9 GEORGE V, A. 1919

LIST OF STATIONS EAST OF QUEBEC.—Continued.

WEST OF QUEBEC.

Name of Station.	Location.	Nautical Miles from Quebec.	Means of Communication.
Bridge Station	$\frac{1}{2}$ mile above new Railway Bridge on south shore.	6	Telephone.
St. Nicholas.....	At Tidal Semaphore.....	12	"
Portneuf.....	In front Lighthouse.....	31	"
Grondines.	In old windmill tower.....	41	"
St. Jean Deschaillons.....	At Tidal Semaphore....	45	"
Pointe Citrouille.....	Lighthouse	55	"
Three Rivers.....	Upper end of Bureau wharf..	68	"
Sorel.....	Middle of Government wharf facing the St. Lawrence riv.	100	"
Bellmouth	About 500 feet east of Contre-cœur lower range light.	110	"
Cap St. Michel.....	On extreme point of Cap St. Michel.	125	"
Longue Pointe	Short dist. below pre bytery.	134	"
R Montreal	La Sauvegarde Building, 92 Notre Dame St. E.	139	"

WEST OF MONTREAL.

		Nautical Miles from Montreal.	
R Lachine Canal....	Lock No. 2.....	0	"
R "	Lachine	8	"
R Soulanges Canal	Cascades Point	21	"
R "	Coteau Landing.....	33	"
R Cornwall Canal.....	Cornwall	62	"
R "	Dickinson's Landing.....	72	"
R Galops Canal... ..	Lift Lock.....	99	Telegraph.
R Welland Canal	Port Dalhousie.....	298	"
R "	Port Colborne.	321	"
R Soo Canal... ..	Sault Ste. Marie, Ont.....	820	"

Stations marked thus "R" are reporting stations only and are not equipped for signalling purposes. Stations marked "X" closed during the period of the war. Stations marked thus "F" are equipped with flash lights for night signalling.

The Longue Pointe signal station was moved to a new site a short distance below the presbytery, owing to the old site being required for track extensions by the Montreal Harbour Commissioners. The building was thoroughly repaired and new basement built, also drain and water connections installed.

BRIEF SUMMARY OF WORK PERFORMED.

1. Stations report movements of vessels to Montreal, Quebec, Sydney, Halifax and St. John.
2. Stations report weather conditions daily to Montreal, Quebec, Sydney, Halifax and St. John.
3. Montreal, Quebec and St. John publish daily bulletins giving weather and ice conditions and movements of vessels.
4. Montreal and Quebec publish daily bulletins showing the depth of water in the river St. Lawrence ship channel at Cap à la Roche and St. Augustin bar.
5. The signal service offices at Montreal, Quebec and St. John are open day and night for the purpose of furnishing the public with information of shipping matters.
6. The telegraph system of the Department of Public Works on the north shore of the gulf of St. Lawrence report the movements of vessels engaged in the coasting trade to the signal service at Quebec.
7. The collectors of Customs at all the seaports in the river and gulf of St. Lawrence, on the Atlantic coast and in the bay of Fundy report the arrival and departure of vessels engaged in the overseas trade.
8. Lloyd's agents at Quebec are furnished daily with full information of casualties and movements of vessels engaged in the overseas trade to and from ports in the province of Quebec.

SESSIONAL PAPER No. 21

9. Lloyd's agents at St. John are furnished daily with full information of casualties and movements of vessels engaged in the overseas trade to and from ports in the Maritime Provinces.

ICE BREAKING, 1917-18.

REPORT OF ALPHONSE LAFLECHE, ACTING RESIDENT ENGINEER.

The Dominion Government steamers *Lady Grey* and *Montcalm* were employed in this work as follows:—

The *Lady Grey* commenced operations on November 23 from the foot of lake St. Peter to Three Rivers, on December 10 proceeded to Quebec to keep Cap Rouge passage and Quebec harbour open, broke two jams at Cap Rouge, one on December 27 and one on February 5. From February 18 to April 23, in conjunction with the *Montcalm*, kept the channel above Quebec open, from April 23 to 27 employed at the request of the Department of Railways and Canals in clearing Soulanges canal. This ended her season's work.

The *Montcalm* began work on December 15 escorting vessels to Murray Bay, from then until January 23 employed in escorting vessels and picking up lightkeepers; remained in Quebec undergoing repairs from January 23 to February 14; from February 18 to April 18, when she returned to Quebec, employed, together with the *Lady Grey*, in keeping the channel open above Quebec.

AVERAGE DEPTH FOR EACH MONTH IN THE 27½-FOOT CHANNEL (27½ FEET AT ORDINARY LOW WATER).

From Sorel Gauge during each year, May to November.

Year.	May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Highest		Lowest.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
1892.....	31	0	31	9	31	6	30	6	28	9	28	3	28	3	33	6	27	3
1893.....	36	0	34	3	30	9	29	9	29	6	28	6	28	0	37	6	27	6
1894.....	34	6	31	9	31	0	29	2	28	3	28	9	29	0	36	0	27	7
1895.....	33	3	31	3	28	3	28	3	27	6	26	9	26	9	34	6	25	10
1896.....	33	6	30	6	28	9	28	0	27	6	27	9	29	0	37	0	27	4
1897.....	35	6	32	6	30	3	29	3	28	0	27	0	27	6	37	0	26	5
1898.....	31	6	30	9	29	8	28	2	28	2	28	3	28	6	32	1	26	9
1899.....	36	2	31	9	30	3	28	6	27	6	28	0	27	9	37	9	26	9
1900.....	33	6	30	9	30	6	29	6	28	1	28	9	29	2	35	9	27	4
1901.....	34	3	31	10	29	2	28	3	27	7	27	4	27	3	36	3	26	6
1902.....	32	2	32	2	32	2	29	4	28	1	28	1	29	0	34	1	27	6
1903.....	33	0	30	11	30	5	29	5	28	4	29	0	27	11	32	8	26	11
1904.....	36	3	34	5	30	9	29	5	29	5	30	4	29	3	37	4	28	1
1905.....	31	10	30	8	29	7	29	0	28	0	28	5	28	1	33	6	27	1
1906.....	32	4	31	5	29	3	27	11	27	3	27	4	27	6	33	3	26	9

AVERAGE DEPTH FOR EACH MONTH IN THE 30-FOOT CHANNEL (30 FEET AT EXTREME LOW WATER OF 1897).

1907.....	37	1	35	9	34	3	32	10	32	4	32	9	33	7	38	3	31	10
1908.....	41	5	37	10	33	10	32	10	32	0	31	0	30	6	42	4	30	0
1909.....	40	6	37	6	33	10	33	2	32	7	32	4	31	6	42	7	30	11
1910.....	35	7	34	5	32	3	31	7	31	6	31	6	31	7	37	1	30	7
1911.....	36	6	34	6	32	1	31	3	30	9	30	2	30	3	38	1	29	4
1912.....	37	9	37	6	33	6	32	8	32	6	32	6	34	9	40	11	31	3
1913.....	37	0	34	4	32	8	31	10	31	6	32	1	32	7	38	6	31	1
1914.....	35	2	33	0	32	4	31	4	31	3	30	11	31	0	36	10	30	3
1915.....	34	7	32	6	31	6	31	4	31	1	30	11	30	8	37	4	30	1
1916.....	38	9	37	2	34	0	32	5	31	7	31	9	31	10	40	0	30	9
1917.....	36	8	36	6	34	10	33	6	32	3	32	6	33	0	38	2	31	3

COST OF SHIP CHANNEL TO DATE.—TABLE SHOWING THE TOTAL COST OF THE DREDGING AND PLANT AND THE QUANTITIES DREDGED TO MARCH 31, 1918.

	Cost of Dredging.	Expenditure for plant, shops, surveys, etc.	Quantities dredged.
	\$ cts.	\$ cts.	Cu. yds.
<i>Montreal Harbour Commissioners, 1851 to 1888.</i>			
Dredging Montreal to Cap à la Roche to 27½ feet at O L.W. and from Cap à la Roche to Quebec to 27½ feet at half tide.....	3,402,494 35	534,809 65	19,865,693
<i>Department of Public Works.</i>			
Dredging consisting of widening and cleaning up of channel, deepening Cap à la Roche to Cap Charles to 27½ feet at O.L.W. and dredging at Grondines, Lotbinière and Ste. Croix 1889 to June 30, 1899....	829,583 08	486,971 79	3,558,733
<i>Project of 1899.</i>			
Dredging Channel between Montreal and Quebec to 30 feet at lowest water of 1897, also widening to a miuimum width of 450 feet and straightening.			
Fiscal Year 1899-1900	100,191 01	265,270 78	1,107,894
" 1900-1901.....	136,680 83	287,040 04	2,479,385
" 1901-1902.....	185,429 80	479,731 47	3,098,350
" 1902-1903	255,776 55	277,703 50	6,544,605
" 1903-1904	276,958 59	308,765 44	4,619,260
<i>Department of Marine and Fisheries.</i>			
(This includes the work below Quebec.)			
Fiscal Year 1904-1905.....	311,087 93	277,225 69	2,716,220
" 1905-1906	431,768 30	317,327 37	1,047,530
" 1906-1907 (July 1, 1906 to March 31, 1907).	302,677 37	275,003 61	3,001,010
" 1907-1908	478,209 66	417,390 22	4,831,875
" 1908-1909.....	497,686 03	340,861 86	5,896,737
" 1909-1910.....	572,950 71	321,375 80	6,354,285
" 1910-1911.....	576,838 02	488,248 88	5,600,050
" 1911-1912	588,697 60	499,799 58	4,509,904
" 1912-1913.....	663,229 74	430,107 86	6,929,344
" 1913-1914.....	895,235 59	426,018 12	6,140,867
" 1914-1915	1,036,846 65	327,975 71	6,225,143
" 1915-1916	976,622 03	771,760 03	8,462,957
" 1916-1917	1,030,550 60	437,469 62	7,800,555
" 1917-1918.....	618,399 69	136,765 97	2,517,376
	14,167,914 13	8,107,622 99	116,307,773

PROGRESS OF DREDGING OPERATIONS AT THE CLOSE OF THE SEASON OF 1917, 30-FOOT PROJECT.

Locality.	Distance English miles.	Total length requiring dredging.	Length dredged in 1917.	Total length of 30 foot channel dredged.	Length yet to be dredged.
		Miles.	Miles.	Miles.	Miles.
Division 1— Montreal to Sorel.....	45	22.90	.....	22.90	All completed.
Division 2— Sorel to Batiscan.. ..	36	12.45	.....	12.45	All completed.
Division 3— Lake St. Peter.....	20	18.00	.....	* 0.50	
Division 4— Batiscan to Quebec.....	59	10.00	0.11	†17.50 8.26	1.74
Division 5— Quebec to the Traverse.....	60	6.65	.....	4.65	2.00
Total.....	220	70.00	0.11	66.26	3.74

* Not widened. † Widened.

SESSIONAL PAPER No. 21

PROGRESS OF DREDGING OPERATIONS AT THE CLOSE OF THE SEASON OF 1917, 30-FOOT PROJECT.

Locality.	Length of Dredging.		Cubic yards yet required to be done.
	Required.	Done.	
Division 1—	Miles.	Miles.	
Longueuil Shoal.....		1.10	
Longue Pte. to Pte. aux Trembles (E. H.).....		5.05	
Ile Ste. Therese.....		0.40	
Varennnes to Cap St. Michel.....		3.00	
Cap St. Michel to Vercheres.....		4.50	
Vercheres Traverse.....		1.10	
Vercheres to Contrecoeur.....		1.70	
Contrecoeur Channel.....		6.05	
Total.....		22.90	
Division 2—			
Sorel to Ile de Grace.....		4.40	
Stone Island.....		1.10	
Ile aux Raisins		0.25	
Lake St. Peter (See Div. 3).....			
Port St. Francis.....		0.50	
Three Rivers.....		0.50	
Cap Madeleine to Becancour.....		1.55	
Becancour to Champlain.....		2.25	
Champlain to Pte. Citrouille.....		1.30	
Batture Perron.....		0.60	
Total.....		12.45	
Division 3—			
Lake St. Peter.....	{	* 0.50 † 17.50	} 200,000
Total.....		18.00	200,000
Diviston 4—			
Batiscan to Cap Levrard		3.00	
Cap à la Roche Channel... ..	0.54	1.46	195,000
Pouillier Rayer.....		1.20	
Cap Charles.....		0.90	
Grondines.....		0.80	
Lotbinière.....		0.40	
Cap Santé.....		0.20	
Ste. Croix.....	0.60	0.30	300,000
St. Augustin.....	0.60		500,000
Total	1.74	8.26	995,000
Division 5:—			
Quebec to the Traverse	2.00	4.65	550.000
Total	2.00	4.65	550,000
Totals.....	3.74	66.26	1,745,000

* Not widened. † Widened.

PROGRESS OF DREDGING OPERATIONS AT THE CLOSE OF THE SEASON OF 1917, 35-FOOT PROJECT.

Locality.	Distance English miles.	Total length requiring dredging.	Length dredged in 1917.	Total length of 35 foot channel dredged.	Length yet to be dredged.
		Miles.	Miles.	Miles.	Miles.
Division 1— Montreal to Sorel.....	45	28.63	1.46	16.03	12.60
Division 2— Sorel to Batiscan.....	36	19.75	0.54	6.09	13.66
Division 3— Lake St. Peter.....	20	18.32	.....	17.03	1.29
Division 4— Batiscan to Quebec.....	59	15.54	.....	.....	15.54
Division 5— Quebec to Goose Cape (North Chan- nel).....	66	8.14	.....	0.75	7.39
Total.....	226	90.38	2.00	39.90	50.48

SESSIONAL PAPER No. 21

PROGRESS OF DREDGING OPERATIONS AT THE CLOSE OF THE SEASON OF 1917, 35-FOOT PROJECT.

Locality.	Length of Dredging in miles.		Cubic Yards yet to be dredged.	Cubic Yards dredged.
	Yet to be done.	Done.		
Division 1—				
Longueuil Shoal.....	1.88	.....	721,454	
Longue Pte. Traverse. ..	0.39	0.08	443,592	51,550
Longue Pte. Curve.	1.24	0.08	991,531	242,350
Pointe aux Trembles Channel....	0.97	2.97	588,552	1,200,075
Ile Ste. Therese Channel.....	1.12	.....	146,611	
Varenes Curve .. .	0.50	1.64	674,396	2,216,210
Cap St. Michel Curve	1.00	.....	500,500	
Cap St. Michel to Vercheres.....	0.25	4.47	140,233	1,913,350
Vercheres Traverse.....	1.10	0.14	281,789	28,875
Vercheres to Contrecoeur.....	1.23	0.68	816,225	554,200
Contrecoeur Channel.....	2.31	5.97	2,038,532	3,574,343
Lanoraie to Sorel.....	0.61	.....	159,215	
Totals Division 1.....	12.60	16.03	7,502,630	9,780,953
Division 2—				
Sorel to Ile de Grace....	1.01	3.97	945,656	2,764,404
Stone Island	1.42	0.69	466,370	414,890
Ile aux Raisins.....	0.99	1.10	202,125	777,224
Port St. Francis.....	0.67	0.33	491,303	248,275
Three Rivers.....	0.72	.....	533,192	
Cap Madeleine to Becancour.....	2.40	.....	1,348,578	
Becancour to Champlain.	1.16	.....	932,750	
Champlain to Pte. Citrouille.....	4.06	.....	2,632,356	
Batture Perron.....	1.23	.....	684,600	
Totals Division 2.....	13.66	6.09	8,236,930	4,204,793
Division 3—				
Lake St. Peter.....	1.29	17.03	1,161,570	11,335,582
Division 4—				
Batiscamp to Cap Levrard.....	4.48	.....	2,386,168	
Cap Levrard Channel.....	1.27	.....	781,666	
Cap à la Roche Curve.	2.06	.....	1,836,859	
Cap Charles Channel.....	2.04	.....	1,077,416	
Grondines.....	0.33	.....	513,332	
Lotbiniere	0.47	.....	321,480	
Cap Santé.....	1.51	.....	655,561	
Ste. Croix.....	1.47	.....	798,518	
St. Augustin.....	1.41	.....	826,207	
Totals Division 4.....	15.54	.....	9,197,207	
Division 5—				
Quebec to Goose Cape (North Channel). ....	.....	.....	.....	.....
Madame Reef Shoal.. .	2.84	.....	2,585,132	
West Sand and East Narrows Shoals.....	4.55	0.75	1,605,673	11,962,368
Totals Division 5.....	7.39	0.75	4,190,805	11,962,368
Totals	50.48	39.90	30,289,142	37,283,696

“Abstract of work of dredging fleet, etc.”

ABSTRACT OF WORK OF DREDGING FLEET DURING FISCAL YEAR ENDED MARCH 31, 1918.

Dredge.	Locality of Dredging.	Time of Service.	Nominal Working Hours 24 per day.	Hours actual dredging.	Number of Scows Filled.	Number of cubic yards dredged (Scow Measurement).	Depth of dredging at L. W.	Width in Feet.	Character of Soil.	Remarks.
"Laurier" No. 2.....	Verchères Traverse...	Days. 30	Hours. 300	198½	139	24,325	Feet in. 35 0	Feet. 450	Clay.....	Captain Raphael Matte.
	Cap à la Roche Curve.	84	840	352	143	25,044	30 0	450 to 550	Shale rock.	
		114	1,140	550½	282	49,369				
"Lady Aberdeen" No. 3..	Pointe aux Trembles Channel.....	96	960	766½	361	67,575	35 0	450	Shale rock and clay...	Captain Noé Baron.
	Channel approach, Pte aux Trembles.....	73	730	702½	249	49,275	28 0	500	Clay and stones.	
		169	1,690	1,468¾	610	116,850				
"Lady Minto" No. 4.....	Ile de Grâce Channel.	124	1,240	891	573	143,250	35 0	450	Clay.....	Captain Jos. Pélouquin.
	Upper Stone Island Course.....	5	50	26¾	10	2,500	35 0	450	Clay	
		129	1,290	917¾	583	145,750				
"Lafontaine" No. 5	Vareunes Curve	28	280	221½	208	38,420	35 0	550 to 600	Clay.....	Captain Pierre Bi-beau.
	Cap à la Roche, Curve	101	1,010	515½	309	55,662	30 0	450 to 550	Shale rock.	
		129	1,290	737	517	94,082				
"Baldwin" No. 6	Repentigny Curve ...	15	150	85½	40	10,000	15 0	450 to 700	Clay and stones.....	Captain Antoine Morin.
	Longue Pointe Curve..	33	330	186½	33	8,250	35 0	450 to 650	Hard-pan.	
	Champlain Channel....	54	540	291½	128	28,400	30 0	450	Sand (Cleaning up).	
		102	1,020	563¾	201	46,650				

SESSIONAL PAPER No. 21

"Beaujeu" No. 8.....	North Channel, East Narrows.....	117½	1,272	1,185½	399	638,400	35	0	1,000	Sand, grav. clay & stones	Captain A. Bourget.
	North Channel, East Narrows.....	14	144	115	23	26,100	35	0	1,000	Sand, grav. clay & stones	Captain A. Hoffman.
	North Channel, West Sand.....	114	1,230	1,062	274	324,700	35	0	1,000	Sand, grav. clay & stones	
		128	1,374	1,177	297	350,800					
Elevator Dredge No. 12....	Petite Traverse	33	330	117½	117	29,250	35	0	450	Clay.	Captain Alexis Morin.
	Contrecœur Traverse..	73	730	487½	507	126,750	35	0	450	Clay.	
		106	1,060	604¾	624	156,000					
Elevator Dredge No. 13....	Ile de Grâce Channel.	105	1,050	789¾	692	207,600	35	0	450	Clay	Captain Pierre Millette.
Elevator Dredge No. 14....	Verchères-Contrecœur Channel.....	124	1,240	902	863	366,775	35	0	450	Clay	Captain Jos. Goudreault.
Elevator Dredge No. 15....	Cap St. Michel-Verchères, Channel....	121	1,210	716	812	345,100	35	0	450	Clay	Captain John Robidoux.
						2,517,376					

APPENDIX No. 4.

SOREL SHIPYARD.

REPORT OF SUPERINTENDENT W. S. JACKSON.

At the commencement of the fiscal year, April 1, 1917, the winter repairs and renewals of the St. Lawrence ship channel fleet and the construction of light department vessels were nearly all completed and the outfitting in progress, engaging of the crews for the new season's work, etc.

The river Richelieu was clear of ice April 6, 1917, and the St. Lawrence at Sorel April 15, 1917.

The first dredge of the fleet left Sorel to go into commission May 3, 1917.

During the season the vessels were all maintained in a good and serviceable condition, and the necessary repairs carried out without undue detention to the working of the vessels.

NEW CONSTRUCTIONS.

C.G.S. *Berthier*, Yard No. 59.—This vessel was completed in the spring of 1917, and after a second satisfactory trial trip, the vessel was transferred to the Naval Service Department and left Sorel on May 16, 1917, for Halifax.

C.G.S. *Argenteuil*, Yard No. 60.—Vessel was launched April 18, 1917, with machinery and boilers on board, after satisfactory trials, left Sorel to go into commission July 7, 1917.

Three single screw steel trawlers, yard Nos. 69, 70 and 71.—(Lot A.B.C. Trawler 32, Trawler 33, Trawler 34), for the Director of Ship Construction, Montreal. The hulls, engines and boilers for all three were made at the shipyard.

Trawler 32 left Sorel, after satisfactory trial trip, for Quebec, December 3, 1917;

Trawler 33 was ready to leave, but was caught by the ice and had to winter in Sorel.

Trawler 34 was also completed by the fall, except the boiler, the material for same not being delivered, the vessel had to remain in Sorel until spring of 1918.

Three single screw wood drifters, yard Nos. 72, 73 and 74.—(Lot D.E.F. D. 51, D. 52, D. 53), for the Director of Ship Construction, Montreal. The hulls and the boilers were all constructed at the shipyard and the engines were supplied by the Director of Ship Construction. These vessels were all completed and tried under steam satisfactorily and left Sorel for Quebec, No. 51, Nov. 15, 1917, No. 52, Nov. 25, 1917, No. 53, Nov. 15, 1917.

Three single screw trawlers, yard Nos. 75, 76 and 77.—(Lot B.), for the Director of Ship Construction, Montreal. The three hulls and two sets of engines are to be constructed by the shipyard and the third set of engines and all three boilers will be supplied to us. This order for two was placed October 31, 1917, and the third hull on January, 1918. Progress on the engines is good, but the hulls are being kept back for want of material.

An order was placed with the department by Messrs. The Canadian Vickers Company, for two Scotch marine boilers for their construction No. 66. They supply the material and we build the boilers for a lump-sum price. The order was placed March 27, 1918. Size of boilers 15 feet 6 inches diameter by 11 feet 6 inches long, working pressure 180 pounds.

SESSIONAL PAPER No. 21

BUOYS.

During the fiscal year 1917-1918, we have constructed and shipped to various destinations twelve buoys of different designs, and we have now orders for three shallow draft bell buoys; four Aga gas buoys and six reinforced steel winter-buoys.

GENERAL.

The shipyard launches *Bronx* and *Leros* were maintained in good order and painted.

All the fences were kept in good order and whitewashed during the season.

The shipyard ways and wharves were repaired and kept in good condition.

The force employed during the fiscal year varied from 703 in June to 912 in November and averaged 807 men daily.

The financial statement shows the total amount expended at the shipyard and ship channel to have been \$1,458,725.09.

APPENDIX No. 5.
EXPENDITURE AND REVENUE.

STATEMENT of Expenditure and Revenue, Marine Department, 1917-18.

Service.	Appropriation.	Expenditure.	Balance.
	\$ cts.	\$ cts.	\$ cts.
Ocean and river service—			
Dominion steamers and icebreakers.....	1,180,000 00	1,108,539 23	71,460 77
Examination of masters and mates.....	16,500 00	13,589 12	2,910 88
Claims vs. defaulting steward.....	827 26	827 26	.....
Investigation into wrecks.....	12,300 00	9,633 18	2,666 82
Schools of navigation.....	8,000 00	4,814 53	3,185 47
Registration of shipping.....	3,000 00	2,615 90	384 10
Removal of obstructions.....	20,000 00	7,719 30	12,280 70
Winter mail service.....	.....	.....	.....
Cattle inspection.....	5,000 00	2,364 88	2,635 12
Wrecking plants.....	45,000 00	42,500 00	2,500 00
Sts. to replace "Quadra".....	159,000 00	.....	150,000 00
Unforeseen expenses.....	5,000 00	70 36	4,929 64
Total.....	1,445,627 26	1,192,673 76	252,953 50
Steamboat inspection—			
Steamboat inspection.....	79,749 00	70,380 61	9,368 39
Public works—Chargeable to capital—			
Ship channel.....	672,000 00	656,421 63	15,578 37
Dredging plant, Montreal and Father Point.....	216,550 00	94,537 59	122,012 41
Total....	888,550 00	750,959 22	137,590 78
Scientific institutions—	201,793 00	193,236 96	8,556 04
Meteorological service.....			
Lighthouse and coast service—			
Compensation to Townsend.....	2,000 00	2,000 00	.....
Agencies, rents and contingencies.....	166,000 00	165,966 79	33 21
Salaries and allowances to lightkeepers.....	485,000 00	464,090 99	20,909 01
Maintenance and repairs to lighthouses.....	750,000 00	700,707 00	49,293 00
Construction of lighthouses, etc.....	600,000 00	357,542 86	242,457 14
Comp. allowance, Hilyard.....	500 00	500 00	.....
Signal service.....	60,000 00	53,253 80	6,746 20
Administration of pilotage.....	56,300 00	52,068 10	4,231 90
Maintenance and repairs to wharves.....	10,000 00	10,019 49	.....
Breaking ice in lake Superior, etc.....	40,000 00	25,141 00	14,859 00
Harbour master, Amherstburg.....	400 00	400 00	.....
Repairs to Maritime Road, Gaspe.....	1,000 00	797 98	202 02
Repairing sts. "Scout".....	12,000 00	4,589 10	7,410 90
Pension to retired pilots.....	8,700 00	8,475 00	225 00
Telephones in connection with aids to navigation...	500 00	.....	560 00
Sts. "Maisonneuve".....	12,000 00	11,936 19	63 81
McGillvray vs Kimber.....	2,821 05	2,821 05	.....
Total.....	2,207,221 05	1,860,309 35	346,931 19
Overdraft.....	.....	.....	19 49
Marine hospitals—			
Marine hospitals.....	75,000 00	51,623 89	23,376 11
Shipwrecked and distressed seamen.....	3,000 00	1,545 52	1,454 48
Total.....	78,000 00	53,169 41	24,830 59

SESSIONAL PAPER No. 21

STATEMENT of Expenditure and Revenue, Marine Department, 1917-18.—*Continued.*

Service.	Appropriation.	Expenditure.	Balance.
	\$ cts.	\$ cts.	\$ cts.
Civil government salaries.....	220,920 83	211,147 70	9,773 13
Contingencies.....	32,000 00	29,621 40	2,378 60
Total, salaries and contingencies.....	252,920 83	240,769 10	12,151 73
Overdraft in repairs to wharves.....			19 49
Grand totals.....	5,153,861 14	4,361,498 41	792,362 73

RECAPITULATION OF SERVICES.

Ocean and river service.....	1,445,627 26	1,192,673 76	252,953 50
Public works (capital)	888,550 00	750,959 22	137,590 78
Lighthouse and coast service.....	2,207,221 05	1,860,309 35	346,911 70
Scientific institutions.....	201,793 00	193,236 96	8,556 04
Marine hospitals.....	78,000 00	53,169 41	24,830 59
Steamboat inspection.....	79,749 00	70,380 61	9,368 39
Civil government salaries.....	220,920 83	211,147 70	9,773 13
Contingencies.....	32,000 00	29,621 40	2,378 60
Grand total.....	5,153,861 14	4,361,498 41	792,362 73
Less overdraft.....			19 49
			792,343 24

STATEMENT of Revenue, Department of Marine, for the fiscal year ending
March 31, 1918.

	Gross.	Refund.	Net.
	\$ cts.	\$ cts.	\$ cts.
Piers and wharves.....	94,622 52	521 00	94,101 52
Harbours.....	1,157 22	.....	1,157 22
DOMINION STEAMERS.			
Champlain—Express, \$402.68; freight, \$2,279.97; passengers, \$6,479.48; war tax, \$7.20; meals, \$2.20.....	9,389 33		
Druid, passengers.....	15 00		
Rouville, freight.....	137 95		
Montcalm—Passengers, \$36.10; freight, \$3.....	39 10		
			9,581 38
Retired pilots' fund.....	5,316 33	.....	5,316 33
Steamboat inspection.....	1,588 80	.....	1,588 80
Steamboat engineers' fees.....	1,204 00	.....	1,204 00
Sick mariners' fund.....	64,351 67	715 97	63,635 70
Signal service dues.....	612 00	.....	612 00
Fines and forfeitures.....	850 00	.....	850 00
Marine register fees.....	54 18	.....	54 18
Examination masters and mates.....	4,504 57	18 72	4,485 85
Casual revenue sundries.....	49,469 76	3,244 61	46,225 15
	233,312 43	4,500 30	288,812 13

APPENDIX No. 6.

METEOROLOGICAL SERVICE.

TORONTO, May 14, 1918.

REPORT OF R. F. STUPART, DIRECTOR.

Meteorological returns have been received at the central office from 607 stations, inclusive of 31 new climatological stations, but exclusive of 112 storm-signal stations, and 7 stations which have ceased reporting.

The following are the new stations, together with the names of the observers:—

Dome Creek, B.C.—E. L. Webber.
 Field, B.C.—Charles Statham.
 Harper's Camp, B.C.—H. L. Walters.
 Lake Hill, B.C.—E. L. Fleming.
 Port Alberni, B.C.—C. T. Hilton.
 Bow Island, Alta.—M. Mortensen.
 Entrance, Alta.—C. MacFayden.
 Meanook, Alta.—H. E. Cook.
 Munson, Alta.—P. R. Fraser.
 North Cooking Lake, Alta.—C. C. Bailey.
 Whitlia, Alta.—R. H. Babe.
 Alingly, Sask.—K. Varasour.
 Bigger, Sask.—Dr. S. E. Shaw.
 Herbert, Sask.—Chas. A. Stewart.
 Lodge Creek, Sask.—W. G. Edgerton.
 Usherville, Sask.—H. M. Morrison.

Crystal City, Man.—Ralph Greenway.
 Morden, Man.—E. M. Straight.
 Portage la Prairie, Man.—John Simpson.
 Algonquin Park, Ont.—Geo. W. Bartlett.
 Franz, Ont.—D. J. Bolton.
 Harrow, Ont.—D. D. Digges.
 Kapuskasing, Ont.—S. Ballantyne.
 Bonaventure, Que.—H. Lane.
 Farnham, Que.—L. E. Lorquet.
 Spirit Lake, Que.—Pascal Fortier.
 McAdam Junction, N.B.—W. J. Vaughan.
 South Alton, N.S.—Thos. Welton.
 Truro Normal College, N.S.—J. A. Benoit.
 Belle Isle, Nfd.—P. Thomas.
 Fogo, Nfd.—Harry Randell.

For various duties in connection with the service 382 persons, chiefly observers, have been in receipt of pay, and of this number 35 were employed in the central office.

CENTRAL OFFICE.

The matter of the appointment of a young man with good university qualifications to the forecasting branch is still in abeyance, but with the return of men from active service it should soon be possible to secure a suitable man.

The daily forecasts have been issued twice daily throughout the year and disseminated widely in all parts of the Dominion. In the western provinces good progress has been made in extending the bulletins to the more important points served by the Canadian Northern Railway, and arrangements have recently been made to issue a daily forecast to places in the interior of British Columbia. The monthly record of meteorological observations which, as stated in my last report has taken the place of the Annual Climatological report, has been brought almost as closely to date as is possible, and the service can no longer be reproached for issuing belated reports. The monthly map published from four to five days after the close of each month gives most valuable information regarding the progress of the seasons and is greatly appreciated by all directly concerned with agricultural operations. The daily weather map has been issued without a break throughout the year and much of the data it contains is telegraphed to all parts of the Dominion. The report of the Toronto Observatory which has been issued annually since 1860 is now printed in the meteorological office press and was in print at an earlier date this year than ever before. It contains data which is of much interest now and will be of the utmost value in the future. Never in the history of the service have there been so many applications for meteorological data as during the past year, and in many instances the preparation of the particular

SESSIONAL PAPER No. 21

data asked for has entailed considerable clerical work. Applications have been from government offices, from electrical development engineers, pulpwood companies, irrigation engineers, railways, legal firms, cities, agricultural institutes, farmers, prospective immigrants and many others, and all inquiries have been replied to as fully and promptly as possible.

The following is a brief summary of the facts regarding storms and the warnings for the past year: navigation on the Great Lakes and in the river and gulf of St. Lawrence did not open until about the end of April and closed again early in December, during the period storms were not numerous. On the Great Lakes the winds only reached gale force on twenty occasions and to that of a fresh or heavy gale but seven times. October was the most stormy month with three fresh to heavy gales, the dates being the 12th, the 26th, and the 29th. One fresh gale was recorded in April, one in May and one in November, while navigation closed after the heavy gale and cold weather of December 8. In the St. Lawrence gales were also few in number, namely twenty-two; eight only attaining to a fresh or heavy storm. In the Maritime Provinces where navigation does not close forty-seven gales were experienced during the fiscal year; nineteen being fresh to heavy. December was the stormiest month with four heavy gales; January, February and March each experiencing three. Warnings were given on nearly all occasions, but several times when signals were displayed no storm was subsequently felt. The despatch of storm warnings was continued throughout the year to Newfoundland and very few were omitted. The ss. *Florizel* which was wrecked on the night of the 23rd of February with a loss of over ninety lives, left St. John's in the face of the heavy easterly gale signals which were flying.

The percentage of verification of storm warnings issued for Canada was 84.1.

PHYSICS BRANCH.

Balloons with self-recording instruments for upper-air investigation were sent up from Woodstock on the international days until November 1917, when the supply of instruments was exhausted.

The particulars of those received are given in the following table:—

Date.	Greatest Height.	Temperature at Greatest Height.	Height of Stratosphere.	Temperature at Base of Stratosphere.
April 12.....	7.3 mls.	—58 F.	6.4 mls.	—60
May 2.	6.7	—60	6.3	—62
June 3. . . .	9.3	—62	6.9	—64
June 6.	9.4	—80	9.3	—80
June 7.....	8.6	—42	Remarks—Did not reach Stratosphere.	

The recoveries have again been poor and it is the intention when the ascensions are resumed to try some other locality that the balloons may stand a better chance of being found. All the results of balloon ascents have been published to date.

During September, 1917, Mr. Patterson took meteorological observations at Father Point, P.Q., during the acoustic survey by Dr. L. V. King. Small balloons were used for the determination of the wind direction and velocity in the upper atmosphere during each set of observations on the sound signals, and observations with a pilot tube to determine the gustiness of the wind were taken. At the same time records of temperature, pressure, humidity and wind were obtained on self-recording instruments. The work was essentially preliminary in character and it revealed the very great importance of a knowledge of the upper-air conditions and the gustiness of the wind, in any investigation on the propagation of fog signals. It also showed this that in order to corelate the different phenomena, the special self-record-

9 GEORGE V, A. 1919

ing instruments with an open time-scale and the time given by our clocks are required. A special report was made on the subject to Dr. King.

On Mr. Patterson's return from Father Point, Que., he was requested to undertake important war work and as he has had to give almost all his time to his new duties it has been found necessary to curtail the work of the physics branch.

The exhaustion of the supply of balloon instruments, and the lack of material for making them and his absence have made it impossible to continue the balloon ascents at present, but it is hoped that they may shortly be resumed.

The observations on evaporation and radiation have been continued, and for the greater part of the year the electrical potential of the air, has been measured, but it has not been possible to complete the installation of the earth thermometers.

All mercury used in barometers is now so carefully purified that the most delicate tests give no trace of impurities, and all barometers that become damaged through breakage of the tubes, etc., are repaired with a new tube and filled in the laboratory by a new process which has given very excellent results.

AGRICULTURAL METEOROLOGY.

The division of Agricultural Meteorology has arranged with the Department of Trade and Commerce to have the assistance and co-operation of the Census and Statistics Office in collecting data regarding wheat growth and the weather changes. Details of this arrangement will be found described in the March number of the "Bulletin of Agricultural Statistics." The experimental plots maintained on the Dominion Experimental Farms are being continued for another year. The data from these plots is now in hand from three successive seasons.

A preliminary article upon the results of the analysis up to the present time will be found in the April number of the "Monthly Bulletin of Agricultural Statistics."

PUBLICATIONS.

The library of the meteorological office received in the year 1917, 284 books and periodicals, besides numerous pamphlets. No books, periodicals or pamphlets were received from Russia, Roumania, Serbia, Belgium, Greece, Bulgaria, Austria-Hungary and Germany. The sending of books and periodicals from British India has been stopped until the end of the war through lack of shipping. France and Italy have sent fewer books and periodicals than usual. Owing to war conditions fewer reports were sent out. Number of year reports sent out, 516; number of Toronto Year Books, 136; Monthly Record, 400 each month; Monthly Map, 547 each month; Daily Map, 380 each day.

INSPECTION OF STATIONS.

The following stations were inspected: Pelee Island, Leamington, Harrow, Port Stanley, Parry Sound, Algonquin Park, Stonecliffe, Woodstock, N.B., Winnipeg, Minnedosa, Saskatoon, Prince Albert, Edmonton, South Athabasca, Meanook, Calgary, Medicine Hat, Swift Current, Qu'Appelle, Montreal, Bonaventure, Paspebiac, St. Godfrey, Port Daniel, L'Anse aux Gascons, Grand River, Cape Cove, L'Anse au Beaufils, Perce, Bathurst, Caraque, Sydney, Louisburg, Glace Bay, Port Morien, Ingonish, North Ingonish, Neils Harbour, Dingwall, White Point, North Sydney, Halifax, Yarmouth, Father Point, Southampton (twice).

MAGNETIC OBSERVATIONS.

During the fiscal year ending March 31, 1917, photographic records of the daily changes in the magnetic elements at both Agincourt and Meanook were obtained without any material loss. Preliminary results obtained from a first reduction of these records are published in the Monthly Journal of the Royal Astronomical Society

SESSIONAL PAPER No. 21

of Canada. The final reduction and analysis of results for the year 1915 were issued during the year and the 1916 results are now being prepared for publication.

Index corrections for compass attachment to 87 transit theodolites were determined and furnished to the Surveyor General, and assistance was given to members of the staff in standardizing their total force instruments both before and after their field work.

A summary of the results of observations during the fiscal year is published in the transactions of the Royal Society for both Agincourt and Meanook.

TIME SERVICE.

During the year ended March, 1918, sixty determinations for time were made in the meridian with the 3-inch Troughton & Simms transit instrument. The positions of the stars have been taken from the British Nautical Almanac and the American Ephemeris. During most of the winter the sky has been very much clouded and the weather generally unfavourable for many observations. The collimation error of the transit has been determined by the usual methods of reversal on Polaris and reversal on the collimation mark and by least squares computation in conjunction with that of the Azimuth error. Time has been given to all enquirers over the telegraph and telephone lines.

The foundation of the transit pier has remained very steady, the instrument not requiring any alteration in adjustment during the year. The different clocks and timepieces have, on the whole, performed well, but a new sidereal clock should be installed, as it is very difficult to keep the time up to the standard with only one clock to rate from. The usual time exchanges between Toronto and Quebec, Montreal and St. John, N.B., have been made and recorded upon the chronographs at the different observatories, the errors of the clocks being obtained by interpolation between the latest observations. Signals have been given over the fire-alarm system throughout the year at 11.55 a.m. Time has been given weekly to the magnetic observatory at Agincourt and also to the Canadian Northern Railway running out of Toronto.

The following table will show the differences between the times at the several observatories and that at Toronto. The sign +, indicates slow of Toronto:—

Date.	Montreal.	Quebec.	St. John.
1917.	Seconds.	Seconds.	Seconds.
April 13	−0·11	+0·04	−0·10
May 11.	−0·61	+0·57	No exchange.
June 8.	−0·04	+0·35	.....
June 29.	−0·14	+0·02	−0·01
July 27.	+0·59	+0·99	+0·04
August 24	−1·34	−0·46	+0·51
September 7.	−0·20	+0·06	+0·02
September 28.	−0·13	+0·44	−0·10
October 19. . . . .	.....	−0·46	−1·20
November 16.	−0·28	+1·01	−0·75
December 14.	−0·04	+0·06	÷0·06
1918.			
January 4.	−0·39	+1·37	+0·69
January 25.	−0·41	−0·23	+0·19
February 22.	−0·56	−0·37	−0·90
March 15.	−0·51	−0·04	−0·86
March 28.	−0·29	+2·06	−0·15
Average difference.	−0·30	+0·24	−0·17

Solar Observations.—The sun was observed with the 6-inch equatorial telescope on 144 days, on none of which was it completely free of spots. Very few observations were taken during December, 1917, and February, 1918, owing to cloudy sky and unfavourable weather conditions.

SEISMOLOGICAL OBSERVATIONS.

The Milne seismographs at Toronto and Victoria have been successfully kept in operation throughout the year without change in adjustment, both booms being kept at a period of 18 seconds. A small, illuminating lamp introduced in the Victoria instrument has reduced the thickness of the centre line on the trace. Previously, the line was so thick, it was impossible to detect small earth tremors.

Toronto registered 144 earthquakes during the year, two of which were very large, five of moderate character, and the remainder with amplitudes from 0.1 to 2 mm. The largest were recorded on May 1 and June 26, with centres in the region of the Kurile islands, and were possibly of submarine origin. The more moderate, occurred on June 8, July 27, August 16, December 29, and February 13, with centres generally in the Caribbean sea region. The quake on the 29th of December caused considerable damage and loss of life in Guatemala, whilst that on February 13, practically destroyed the Chinese city of Swatow, with the loss of life amounting to 10,000. Victoria recorded 122 disturbances during the year.

We continue to forward copies of our observations to various seismological bureaus throughout the world. Both Canadian stations are considered of great importance in helping to solve the laws regulating word-shaking earthquakes, but our seismographs were installed over twenty years ago, and seismologists consider the type as partially obsolete. The longitudinal or preliminary waves in a large percentage of cases are not registered, and it is highly important in the present study of seismology that these waves should be recorded, to determine absolutely their speed through the inner portion of the earth. A new type instrument adopted by the seismological committee of the British Association fulfills this requirement, and their stations are gradually being equipped with it.

It is hoped that in the near future our Canadian stations may be equipped with the same type, thereby restoring the value of our records to that high standard attained in earlier years.

PHENOLOGICAL OBSERVATIONS.

Phenological observation reports giving the dates of ploughing, sowing and reaping of grain, the flowering of plants, arrival of birds, etc., which indicate climatological conditions were received from forty-five stations. This is in excess of the number of the previous year. Excellent schedules, including average dates for Nova Scotia, were kindly supplied by Dr. A. H. Mackay, superintendent of education for that province; and credit is also due to Mr. W. H. Magee, inspector of schools for Saskatchewan, for seven reports from his section of that province. The collection and tabulation of phenological statistics is in charge of Mr. F. F. Payne.

OUTSIDE STATIONS.

Victoria.—The chief meteorological observatory of British Columbia to which all stations in that province report has been under the superintendence of Mr. F. N. Denison, who, with a staff of four assistants, has prepared bi-daily weather maps and issued forecasts for portions of the lower mainland. Quite recently it has been arranged to extend these forecasts to the more easterly portions of the province. Mr. Denison also superintends the computation of mean values for most of the stations and prepares monthly and weekly summaries for the press. The time ball at Victoria is operated by electric signal from the meteorological observatory. In addition to the meteorological and time work Mr. Denison has charge of a seismological equipment, which has for many years given most valuable records of seismic disturbance.

SESSIONAL PAPER No. 21

Edmonton.—Much of the work of this chief provincial station has, on account of the war, been in abeyance for the past three years, and at the present time no work beyond that of a telegraph reporting station is carried on.

Moosejaw.—All existing data regarding the climate of Saskatchewan are on file at the meteorological office in this town.

Montreal.—Prof. C. H. McLeod, who since 1873 had been in charge of the meteorological work at McGill University, died very suddenly and the service was thus deprived of an experienced and valued observer and meteorologist. His successor in office, Mr. James Weir, who for several years had been chief assistant, has furnished an exhaustive report of which the following is a synopsis:—

“The usual activities of the station have been carried on continuously throughout the year. Four eye observations of the various meteorological instruments are made daily and are used to standardize the continuous records obtained from self-recording instruments. Two reports are telegraphed daily to the central office, Toronto, for purposes of the weather map. The forecasts from the central office are received here through the Great Northwestern Telegraph about 11 a.m., and are thereafter available for the information of the public. The first report is by telephone and contains only the forecast proper. The bulletin arrives about 3 p.m. Scattered calls for the forecast are made, but the public are as yet not sufficiently aware of this facility.”

Time service.—Determinations of clock errors have been made by observations of 576 standard transits on 110 nights. The set in a night usually consists of 6 stars, one polar and two equatorial stars in each of the reverse positions of the instrument. The observed times of transit are recorded on the chronograph. The Troughton and Simms transit used is provided with a micrometer eye-piece arranged to make contacts. The probable error of the determinations usually is several hundredths of a second. Greater precision is futile in view of the time-keeping possibilities of the astronomical clocks in use, and the fact that the time signals given out, if kept well within the second, are subject to no criticism from the city, shipping and railway services which they supply. The Howard mean-time clock is regulated to carry 75th meridian time, or rather, at present, one hour in advance of it, and by means of its automatic system of signals, a knowledge of this time is given to a wide public. The following corporations receive these time signals: The Canadian Pacific Railway Company transmitting it daily to all stations along their lines to the Pacific, the Grand Trunk Railway Company despatching it from their head offices for their Eastern lines, the harbour commissioners of Montreal and the shipping. The noon time-ball for the use of shipping is regularly dropped on week days. At such times in the winter as it was ascertained the ball was not in action, the responsibility was placed with the harbour custodians. No failures to throw the switch at the observatory are to be reported throughout the year. By a special set of noon signals the fire stations and city utilize our time. In addition several jewellers requiring an accurate time standard have had installed loops and ticker service. Rental of the lines is chargeable against this service and the electric work is attended to by the Dominion Gresham Guarantee Company. It has been recently ascertained that the railways are satisfied with the character of service received and the intention is that their subscription, as well as those of the jewellers, shall be made payable to the bursar's office of the university and appear in the observatory items of grants and revenues.

APPENDIX A.

Arthur Smith of the Quebec Observatory, reports as follows:—The work performed at this observatory has been the same as in former years.

Besides the usual meteorological observations which were recorded without interruption, special reports and information were furnished to the public through the newspapers or otherwise.

The correct time was given by means of the telephone, and during the season of navigation by means of the old time-ball until the 6th of August when it was replaced by the new time-ball which was erected on the "Cavalier" building at the citadel. The ball was continued during part of the month of January as several sea-going steamers were still in the port of Quebec.

APPENDIX B.

D. L. Hutchinson, Director of the Observatory, St. John, N.B., reports as follows:—

Meteorological Service.

The regular observations of the various meteorological elements have been made, as particularized in previous reports, three times daily, without a break during the year. The morning and night observations are immediately telegraphed to Toronto; these, as well as the afternoon instrumental readings, serve as a check upon the autographic recording barograph, thermograph and hygrograph. Records of pressure temperature and relative humidity from these instruments, as well as wind direction and velocity from the anemograph, are tabulated for every hour and daily and monthly means abstracted. No important change has been made in the meteorological equipment. All instruments and apparatus are in good condition.

Comparison of instruments with the observatory standards for engineers, the military and others, has frequently been made and comparative data from the hourly records supplied to engineers doing field work in different parts of this province. The wind station at Point Lepreau continues to give valuable records of direction and velocity in that part of the bay of Fundy. The automatic records are sent here from that station for tabulation.

The "Weather Bulletin" has, as in the past, been issued every week-day morning. It is posted in prominent places and distributed through the mail, published in full by some and in part by others of our daily papers. The ever increasing and numerous daily requests for the weather forecasts, present and past conditions are answered at all times.

The New Brunswick Telephone Company continues the courtesy of sending the daily forecasts to all their stations in this province and at many of these stations bulletins are daily displayed. This service, I have been informed, is greatly appreciated by the residents of the different localities.

The monthly returns received here from all stations in the Maritime Provinces have been carefully checked and in most returns summed and meaned. After the necessary climatological data have been entered in our office registers the reports are prepared for publication and forwarded to your central office at Toronto. The climatological and other statistics from these reports are available to promptly answer the various inquiries we have for data covering the different points of the Maritime Province observing stations. To add to the efficiency of this service, more temperature and rainfall stations are particularly needed in New Brunswick to supply information about watersheds of rivers which are likely to be prospected for power purposes.

SESSIONAL PAPER No. 21

Maritime Province Time Service.

For the determination of the errors and rates of the sidereal clocks, observations of stars with the meridian telescope were made entirely by the impersonal micrometer method, the records from the contact points on the micrometer head being recorded on the chronograph sheet along with the seconds of the observing clock. The collimation and azimuth errors were determined from the observations, reversing the instrument upon its Ys about the middle of the group of stars under observation. The standard clocks continue to give accurate results. The primary sidereal in the basement clock-room has been run under constant pressure and temperature. The sealing of this clock to maintain constant pressure continues so perfect that not one stroke of the air pump was necessary during the year.

The mean time transmitting clock with its electrical contacts for automatically sending the time signals, as well as the various electrical appliances connected with this service, remains in excellent condition. The 10 a.m. daily time-signals now so useful and well known throughout the Maritime Provinces have been continued regularly. Special signals, when called for, are transmitted by telegraph or telephone, the beats of the mean-time clock relay being quite audible in the long distance receivers. Several of the chronometer and watch adjusters in Halifax, the Admiralty, Cable Docks and Nova Scotia Telephone Company, have private wire connection locally with the Western Union Office and receive our daily signal. The watch inspectors of the Canadian Government Railways in various parts of the provinces have wire connection with sounders on their premises to receive the time signal.

The St. John time ball has been dropped each week-day at 1 p.m. Atlantic standard time, excepting three days during the winter months, when the failures were caused by unavoidable wire trouble. In St. John the system of hourly synchronizing tower, street, factory, bank and office clocks by direct wire from the observatory continues to give satisfactory and useful service under the arrangement referred to in my previous reports. Those chronometer and watch adjusters not having their clocks hourly synchronized take the second beats by telephone and the public generally give us innumerable telephone calls daily for the correct time.

The Halifax time ball is dropped at 1 p.m. by time signals from the observatory, through the master clock in the Western Union Telegraph office there, which is automatically synchronized by our 10 a.m. time signal. The Halifax time service was temporarily deranged at the time of the explosion but though the plate-glass windows within a few feet of the pier carrying the master clock were completely shattered this clock was undamaged, did not stop, though undoubtedly disturbed by the severe shocks, and upon receipt of the first time signal from this observatory twelve days after the explosion, it was found to be eleven seconds slow. No damage occurred to the time ball apparatus on the citadel.

APPENDIX C.

F. Napier Denison, Director of the Gonzales Heights Observatory, Victoria, B.C., reports as follows:—

During the past year regular observations have been taken three times daily, and weather forecasts issued both morning and evening daily except on Sundays. These are published in the press on Vancouver island and on the lower mainland, and special morning weather bulletins are regularly delivered and posted in the city. Numerous inquiries by phone respecting weather conditions also have been attended to. Storm warning signals have been displayed at Victoria, Nanaimo, and Vancouver, and special warnings sent to certain shipping interests in advance of the great Pacific storms which during the winter season frequently spread over Vancouver island to the strait of Georgia.

9 GEORGE V, A. 1919

Weekly and monthly weather reports obtained from our British Columbia telegraph stations are regularly published in the press of this province, and during the summer months special weather forecasts were furnished the Provincial Forestry Department respecting the advent of hot spells and dry winds which increase the forest fire risk.

River-level observations have been continuously taken at Kamloops, Lytton, and Yale during the spring and summer season, in order that these reports, in connection with our weather charts, will aid in the issuing of correct river-flood warnings in advance of dangerous river-levels in the Delta district of the Fraser river.

The monthly weather reports from all British Columbia stations, amounting to 135, have been regularly received here, checked and entered in our register, then forwarded to you for publication. Seventy weather reports are also received each month from certain provincial government stations. These are also entered here and then forwarded to you.

TIME SERVICE.

Owing to accurate star transit observations and steady rates maintained by the mean-time clock and the chronometers, the time service has been very satisfactory. The time ball on the Belmont building has been regularly dropped from this office at 1 p.m. daily, including Sundays and holidays, and it is used for setting public clocks, factory whistles, as well as being watched by shipping interests and numerous citizens.

I am pleased to state that during the year, I have, by special arrangement with Mr. Haughton, superintendent of our British Columbia Radio Telegraph Service, been able to furnish the time daily to all his wireless stations within a radius of 300 miles of Victoria at ten o'clock each morning. These time signals can also be picked up by any ships within this radius, including those lying in the harbours of Vancouver and Nanaimo.

I have now designed an automatic instrument, so that the international time letters may be sent accurately, when time will permit Mr. Haughton to have this instrument constructed.

During the year I have succeeded in purchasing two fine English pendulum clocks here in Victoria. One, after attaching an electric minute contact, is marking off the minutes on the vertical seismograph, and is holding a steady rate of one second per day. The other is being used as the mean-time clock in the time room, and having a very finely compensated pendulum, is maintaining a steady rate of one-quarter of a second per day.

Seismology.

During the past year 114 earthquakes were recorded here, while last year the number was 126. This year the maximum monthly number was 18 in July, while last year the monthly maximum was 17 in September. As slight changes of temperature have in the past affected the proper recording of quakes on the vertical seismograph by crowding the lines, I have perfected a delicate electric thermostat, which now keeps the temperature change to one-tenth of a degree F., and now clear parallel lines are obtained on the smoked paper surface.

As the records from this instrument are at all times visible quakes are clearly shown as soon as recorded, and in cases of large quakes, the time and place of origin of these can quickly be placed on the wire for the benefit of other observatories and the public.

The slow daily movements of the E-W horizontal pendulum have been carefully recorded, and as in the past 19 years interesting results have been obtained.

SESSIONAL PAPER No. 21

In connection with the study of these slow earth movements, I am pleased to state that the Honourable Minister of Mines for British Columbia has asked me to construct for his department, a delicate seismograph to be placed in the coal mines at Fernie, as an aid in determining the advent of dangerous conditions which might lead to gas explosions or serious "bumps."

It is gratifying to be able to report that during the past year over 700 visitors have been shown over this institution, and apart from the deep interest shown by them in the instruments, etc., the view from the roof was in all cases termed one of the finest in the world.

The amount of correspondence has also increased remarkably, amounting to 1,086 letters, both inward and outward, and 97 of the latter contained climatic data in reply to enquiries.

In conclusion I would respectfully urge that the British seismographs asked for last year, be purchased in order that more efficient and important practical work could be carried on here.

APPENDIX No. 7.

ANNUAL REPORT OF C. H. GODIN, MEDICAL SUPERINTENDENT OF THE
MARINE HOSPITAL SERVICE, FOR THE FISCAL YEAR 1917-18.

SICK AND DISTRESSED MARINERS.

Under the provisions of the Canada Shipping Act, chapter 113, part 5, section 384, R.S., dues of 1½ cent per ton registered tonnage are levied on every vessel entering any port of the provinces of Quebec, Nova Scotia, New Brunswick, Prince Edward Island, and British Columbia. The money thus collected forms the Sick Mariners' Fund. Vessels of the burden of 100 tons and less pay duty once in each calendar year, and vessels of more than 100 tons registered tonnage, three times in each year.

The officers and seamen of all fishing vessels not registered in Canada do not pay sick mariners' dues nor participate in the benefits accruing therefrom, but such vessels registered in Canada may pay dues and participate in the benefits. If such ship is of the burden of more than 100 tons, registered tonnage, such payment shall entitle, to the said rights and benefits, only the master and mariners employed upon the voyage in respect of which such payment has been made; but the payment of the said duty three times in any calendar year in respect of such ship shall entitle the master and mariners thereof to the said rights and benefits during the remainder of such year in any such port.

The Act, chapter 113, Canadian Shipping, does not apply to the province of Ontario, so no dues are collected from vessels in that province.

Province of Quebec.—In this province sick mariners are treated at the following places: Quebec, at Jeffrey Hale and Hotel Dieu hospitals; Montreal, at the General and Notre Dame hospitals; infectious diseases are treated at the Alexandra and St. Paul's hospitals; Three Rivers, at the St. Joseph's hospital; Chicoutimi, at St. Valier's hospital; St. John, at St. John's hospital. At the ports of Rimouski, Sorel, and Rivière du Loup sick mariners are treated in the different local hospitals, and the medical services are rendered by the port physician.

Province of Nova Scotia.—Marine hospitals are maintained at Louisburg, Lunenburg, and Sydney. In Halifax treatment is given at the Victoria General hospital. Contagious diseases are treated at the City Isolation hospital. At Pictou, seamen are treated at the Pictou Cottage hospital, at North Sydney treatment is given at the Hamilton Memorial hospital, at Windsor seamen are treated at the Payzant Memorial hospital, at Amherst at the Highland View hospital. For Parrsboro and vicinity, sick seamen are taken to the Cottage hospital at Springhill. At Digby, sick mariners are treated at a designated hospital and the medical services are rendered by the port physician.

Province of British Columbia.—Victoria, sick mariners are treated at St. Joseph's hospital, Vancouver, at St. Paul's hospital, Nanaimo, at Nanaimo hospital, New Westminster, at St. Mary's hospital, Prince Rupert, at the Prince Rupert General hospital, Powell River, at St. Luke's hospital; at Chemainus and Ladysmith, sick mariners are treated in local hospitals, and the medical services are rendered by the port physician.

Province of New Brunswick.—A marine hospital is operated and maintained at Douglastown for sick mariners arriving at Chatham, Newcastle, and vicinity. In St. John, treatment is given at the General Public Commissioners' hospital; Campbellton, at the Hotel Dieu; Moncton, at the Moncton hospital.

SESSIONAL PAPER No. 21

Province of Prince Edward Island.—At Charlottetown, treatment is given at the Charlottetown and Prince Edward Island hospitals, and at Summerside, at the Prince County hospital.

Where no hospital is maintained or designated in any part of the Maritime Provinces, Quebec, or British Columbia, the collector of customs is authorized to make the best provisions for sick mariners entitled to receive benefits of the fund.

Amount of appropriation.....	\$75,000 00
Amount of expenditure....	51,447 17
Balance not expended.....	\$23,552 83

REFUNDS.

Naval Service.....	\$2,222 40
Railways & Canals.....	201 00
Total refunds.....	\$2,423 40

EXPENDITURE BY PROVINCES.

Province.	Number of Seamen.	Days Treat- ment.	Total Expenditure.
			\$ cts.
Nova Scotia..	1,007	9,966	26,289 01
New Brunswick.....	262	1,319	5,942 95
Prince Edward Island.....	93	614	1,988 70
Quebec	453	5,963	11,594 35
British Columbia.....	286	3,339	7,784 35
General Account.....	1	29	271 21
Total..	2,102	21,222	53,870 57

TABLE SHOWING EXPENDITURE FOR TREATMENT, BOARD, SUPPLIES, Etc., BY PROVINCES.

	Nova Scotia.	New Bruns- wick.	P.E.I.	Quebec.	British Columbia.	General Acct.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Board in hospitals and private houses....	12,082 81	1,970 15	837 05	8,911 30	5,570 75	78 50
Medical and surgical treatment	1,242 90	643 15	493 15	463 05	49 60	
Medical officers' and keepers' salaries	9,519 55	2,900 00	650 00	1,275 00	1,500 00	
Fuel.....	1,007 13	127 01				
Water	54 00					
Light.....	184 46	25 50				
Supplies.....	808 33	16 75				
Telephone services.....	79 71	18 00				
Drugs, etc.....	374 08					
Repairs, etc	512 84	36 39				
Burials	25 00					
Transportation	70 20	6 00	8 50	145 00	39 00	
Special nursing.....	8 00				225 00	
Grants.....	300 00	200 00		800 00	400 00	
Medical assistance	20 00					
Printing						192 71
Totals.....	26,289 01	5,942 95	1,988 70	11,594 35	7,784 35	271 21

Total number sick mariners treated during the year 1917-18.....	2,102
Number of vessels which paid Sick Mariners' Dues.....	2,911
Membership of crews.....	58,041
Total amount of salaries paid to medical officers and keepers during the year 1917-18.....	\$15,844

GRANTS TO SEAMEN'S INSTITUTES.

<i>Nova Scotia—</i>			
Seamen's Society, Halifax.....	\$	200 00	\$ 200 00
North Sydney Sailor's Home.....		100 00	100 00
<i>New Brunswick—</i>			
Seamen's Mission Society, St. John.....		200 00	200 00
<i>Quebec—</i>			
Montreal Seamen's Institute.....		200 00	200 00
“ Catholic Sailor's Club.....		200 00	200 00
Quebec Seamen's Institute.....		200 00	200 00
“ Catholic Sailor's Club.....		200 00	200 00
<i>British Columbia—</i>			
Seamen's Institute, Vancouver.....		200 00	200 00
“ “ Victoria		200 00	200 00
Total		\$	1,700 00

APPENDIX No. 8.

REPORT OF L. A. DEMERS, WRECK COMMISSIONER.

OTTAWA, May 20, 1918.

Formal investigations during the year.	30
Preliminary inquiries.	6

During the calendar year 1917 there were 239 casualties reported to the department, the tonnage of same being 715,383.87, and the damage approximately estimated at \$4,850,145 to ships and \$4,310,350 to cargo, while 152 lives were lost.

Of this total number of casualties 176 were to coasting and sea-going vessels, the tonnage of same being 141,104.17, the damage approximately estimated at \$4,608,445 to ships and \$4,234,850 to cargo, and 134 lives were lost; while 63 of the casualties were to inland vessels, the tonnage of which being 574,279.70, damage to same being estimated at \$241,700 to ships and \$75,500 to cargo, and 18 lives were lost.

In 108 of the casualties to coasting and sea-going vessels and 35 of the casualties to inland vessels the amount of damage is not stated.

Sixty-three of the casualties to coasting and sea-going vessels made up of 30 steam and 33 sailing vessels, resulted in total loss, the tonnage of same being 29,612.37, and this number 54 were Canadian, 5 British and 4 foreign vessels.

Fifteen of the casualties to inland vessels—made up of 11 steam and 4 sailing vessels—resulted in total losses, the tonnage of same being 4,104.18, and of this number 12 were Canadian and 3 foreign vessels.

Casualties are given under the following headings:—

<i>Coasting and Sea-going vessels.</i>	
Collisions.	29
Foundering.	18
Missing vessels	5
Miscellaneous accidents (fire, loss of sails, riggings, etc., etc.)	34
Strandings	78
Vessels sunk by submarines.	12

<i>Inland vessels.</i>	
Collisions.	13
Foundering.	10
Miscellaneous accidents	7
Strandings	33

STATEMENT of investigations into wrecks and casualties which occurred to Canadian, British and foreign vessels, held in Canada during the fiscal year 1917-1918.

Name of ship, No., and Registered Port.	Remarks.
A. E. Ames, 114449, Newcastle, and Keybell, 131111, Montreal.	On June 29 collided in lake Ontario. Formal investigation was held at Montreal on July 25, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors. <i>Finding.</i> —SS. <i>Keybell</i> to blame for collision. Master, George Bunting, found in default for violation of the Rules of the Road, and his certificate is suspended for a year. Masters of both vessels are severely reprimanded for not inquiring after collision.

9 GEORGE V, A. 1919

STATEMENT of investigations into wrecks and casualties, etc.—*Continued.*

Name of ship, No., and Registered Port.	Remarks.
Aranmore, 58,579, Glasgow, and Cyrene, 85849, Lunenburg, N.S.	In collision, on August 27, in Pictou narrows, entrance to Pictou harbour, resulting in the sinking of the schooner <i>Cyrene</i> . Formal investigation was held at Charlottetown, P.E.I., on August 31, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Alex. McLeod and J. Lunsdame, acting as nautical assessors. <i>Finding.</i> —Master of <i>Aranmore</i> , D. M. McDonald, found in default for careless navigation, and his certificate is suspended for a year.
Albert Y. Gowan (American).	On August 28 foundered in Louise basin. Formal investigation was held at Quebec on October 26 and 27, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors. <i>Finding.</i> —Master, Eugene Fortin, found in default for gross negligence in the supervision of his ship, and his certificate is suspended for six months.
Transport "Ardgair". Angouleme, 138211, Montreal.	On August 26 stranded on Amherst island, one of the group of Magdalen islands. Formal investigation was held at Halifax on September 12, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Commander E. Wyatt, R.N.R. and Capt. C. Adams, acting as nautical assessors. <i>Finding.</i> —Master, Wm. Mackintosh, censured for not having taken soundings when a certain distance had been run. On January 6, 1918, stranded near Main-à-Dieu passage, Cape Breton. Formal investigation was held at Sydney on February 25, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains A. J. Morrison and J. D. Mackenzie, acting as nautical assessors. <i>Finding.</i> —Master, E. K. Perry, to blame for neglectfulness and carelessness in navigating his ship. His certificate is suspended for nine months.
Cape Corso, 117396, Greenock.	On May 15 stranded in vicinity of cape Chat, gulf St. Lawrence. Formal investigation was held at Montreal on May 18, 19 and 29, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors. <i>Finding.</i> —Master, A. J. M. Henderson, found at fault for careless navigation, and his certificate is suspended for two months. Chief officer, Fred Stark, severely reprimanded for advising second officer to abbreviate his entries in scrap log. Second officer, John Shaw, severely reprimanded and censured for tampering with his scrap log.
Clematis, 109887, North Shields.	On June 16 stranded near Red cape, Framboise, Cape Breton. Formal investigation was held at Halifax July 12, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Commander E. Wyatt, R.N.R., and Capt. T. A. Hill, acting as nautical assessors.
Coniston and West Har- tlepool 112429, string of 16 barges in tow of tug "Virginia", 71- 615, Montreal.	On June 18, collided on lake St. Peter, resulting in the sinking of barge <i>Alonzo P. Burt</i> . Formal investigation was held at Montreal on August 3, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors. Case was adjourned <i>sine die</i> at the request of the counsels.
Celia, 118407, London, and Katie H. 125998, Quebec.	On August 3 collided near buoy 123L, Pointe au Soldat, river St. Lawrence. Formal investigation was held at Montreal on August 7, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors. <i>Finding.</i> — <i>Celia</i> alone to blame. Pilot D. P. Perrault, in full charge and control of ship at time of accident, has his license suspended for one month and is ordered to pay cost of investigation.
Dreadful, 131148, Vancouver. Lobnitz No. 1, 130895, Victoria.	On May 19 collided in Victoria harbour. Preliminary inquiry was held at Victoria on May 23 and 25, before Capt. John D. MacPherson, Wreck Commissioner for British Columbia, assisted by Captains W. Wingate and W. H. Porter, acting as nautical assessors. <i>Finding.</i> —Robert McDowell, engineer on watch on <i>Dreadful</i> , responsible for accident, by putting his engines ahead instead of astern as ordered. He is reprimanded and warned to be more careful in future. Court is lenient owing to the manly and straightforward manner in which he admitted his mistake.

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties, etc.—*Continued.*

Name of ship, Official No., and Registered Port.	Remarks.
Drill Plant No. 2, Ottawa, and tug Respond, 133768, Victoria.	On May 19 collided in Victoria harbour. Preliminary inquiry was held held at Victoria on June 27 and 29, before Capt. John D. MacPherson. Formal investigation ensued being held also at Victoria on October 19, before Capt. Charles Eddie, assisted by Captains J. T. Shenton and T. James, acting as nautical assessors. <i>Finding.</i> —Collision due to action of master of <i>Respond</i> , F. H. Cole, in attempting a risky manœuvre having a heavily laden scow alongside.
Drill Plant No. 2, and tug Germania, 131310,	On May 19 collided in Victoria harbour. Preliminary inquiry was held at Vancouver on July 3, before Capt. John D. MacPherson. The decision arrived at was that accident was due to error of judgment on part of master of <i>Germania</i> . Formal investigation not found necessary.
Frankmere, 131359, Liverpool.	On August 5 stranded on Bryon island, one of the Magdalen group, gulf St. Lawrence. Formal investigation was held at Halifax on September 11, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Comdr. E. Wyatt, R.N.R. and Capt. C. Adams, acting as nautical assessors. <i>Finding.</i> —Master, David Thomas Evans, is severely reprimanded and censured for injudicious navigation; but his certificate is not dealt with on account of his previous good record.
Gray, 124395, Workington.	On October 20 stranded off Calvert island, Queen Charlotte sound. Preliminary inquiry was held at Victoria on December 21, before Capt. John D. MacPherson. The decision arrived at was that no one was to blame, vessel striking an uncharted reef.
Heathcote, 12904, and Kilbergen (Transport), Sydney, N.S.	On July 25 collided seven miles West of cape Ray, Newfoundland. Formal investigation was held at Quebec on August 2 and 3, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors. <i>Finding.</i> — <i>Kilbergen</i> mostly to blame for collision and certificate of master, John S. Ledsome, is suspended for three months.
Harkness (Transport).	On July 23 stranded on Red island, St. Lawrence river. Formal investigation was held at Montreal on August 29, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors. <i>Finding.</i> — <i>Pilot</i> , Adjutor Lachance, to blame for casualty and his license is cancelled.
Imperoyal, 135209, Sarnia, and Maisonneuve, 100658, Ottawa.	On June 5 collided near Contrecoeur, river St. Lawrence. Formal investigation was held at Montreal on June 18 and 19, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors. <i>Finding.</i> — <i>Imperoyal</i> to blame for collision, navigating with improper lights. Pilot held in default for not seeing that only proper sailing lights be exhibited. He is reprimanded. Master of <i>Maisonneuve</i> , Jean Paquet, found culpable of negligence and not competent to command a vessel. His certificate is cancelled. Court recommend that <i>Maisonneuve</i> pays fine of \$100 for having violated sec. 671, part VII, chap. 113, R.S.C.
Lord Antrim, 113518, Belfast.	On May 3, stranded near Fourchu, N.S. Formal investigation was held at Sydney on May 10, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains A. J. Morrison and J. D. MacKenzie, acting as nautical assessors. <i>Finding.</i> —No one to blame; ship struck a submerged object.
Letitia, 133033, Glasgow.	On August 1 stranded and lost near Portugese cove, Halifax harbour. Formal investigation was held at Halifax on August 13 and 14, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Commander E. Wyatt, R.N.R. and Commander Charles White, and J. D. MacKenzie, R.N., acting as nautical assessors. <i>Finding.</i> —Stranding due to action of pilot, in accepting without verification bearings given by pilot in charge of cutter.
Maskinonge, 131422, Liverpool.	On April 28 stranded in St. John, N.B., harbour. Formal investigation was held at St. John on May 9, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Lieut.-Commander A. J. Mulcahy, R.N.V.R., and Capt. James Hayes, acting as nautical assessors. <i>Finding.</i> —No one to blame; vessel dragged her anchors.

9 GEORGE V, A. 1919

STATEMENT of investigations into wrecks and casualties, etc.—*Continued.*

Name of ship, Official No., and Registered Port.	Remarks.
Middlesex (barge) 135569, Liverpool,	On August 13 stranded in river St. Lawrence, whilst in tow of tugs <i>Myra</i> and <i>Long Sault</i> . Formal investigation was held at Montreal on August 27 and 28, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors.
Durn (barge), and Schr. Arthur,	<i>Finding.</i> —Tug <i>Myra</i> chiefly to blame for accident, and master's certificate of Edmond Robinault is suspended for three months. <i>Long Sault</i> partly responsible, but to very little degree. Certificate Captain, Charles Pilon, is suspended for one month. Owners of each tug ordered by court to defray cost of investigation.
Mont Blanc (France) and Imo, (Norway).	On December 6 collided in Halifax harbour. Explosion which followed caused great devastation in the harbour and city and about fifteen hundred lives were lost, including one of the crew of <i>Mont Blanc</i> and six of <i>Imo</i> . Formal investigation was held at Halifax on December 13 to 21 and January 21 to 31, inclusive, before Hon. Arthur Drysdale, Justice of the Supreme Court of Nova Scotia, assisted by Captains L. A. Demers, Dominion Wreck Commissioner and Charles Hose, R.C.N., acting as nautical assessors. <i>Finding.</i> — <i>Mont Blanc</i> to blame, having violated Rules of the Road, and pilot McKay's license is cancelled. Court recommend to French authorities to cancel Captain Lemedec's certificate. Pilot Renner, in charge of an American tramp steamer, at time of accident, is censured.
Pilot, 107109, Victoria.	Not heard of since leaving Salina Cruz, Mexico, for Ocos, Guatemala, on February 1, 1918. Preliminary inquiry was held at Victoria on May 16 and 29, before Capt. John D. MacPherson. Cause of loss could not be ascertained.
Prince Rupert, 129743, Newcastle.	On March 22 stranded near Gem island. Formal investigation was held at Victoria on April 30, before Capt. John D. MacPherson, Dominion Wreck Commissioner, assisted by Captains Charles Clarke and S. W. Buckram, acting as nautical assessors. <i>Finding.</i> —No one to blame, stranding due to snow storm.
Premier, 98964, London.	On June 2 stranded and lost near Pollock shoal, Nova Scotia. Formal investigation was held at Halifax on June 11, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains R. C. Oliver and J. A. McDonald, acting as nautical assessors. <i>Finding.</i> —Master, G. Henebery, severely reprimanded for lack of judgment in failing to adopt seamanlike methods in attempting to free his ship; but on account of his previous good record his certificate is not dealt with. First officer, Geo. McLean, warned to exercise better care in future in keeping his log. Second engineer, Byron Irwin, warned to be careful to note movements of engines with accuracy, whilst he is on watch.
Point Hope (Tug), Ottawa.	On June 28 struck bridge in Victoria harbour. Preliminary inquiry was held at Victoria on July 12, before Capt. John D. MacPherson. Decision arrived at: No one to blame, accident unavoidable under circumstances.
Princess Maquina, 133, 769, Victoria.	On June 16 stranded near Kyuquot. Preliminary inquiry was held at Victoria on July 31 and August 2 and 3, before Capt. John D. MacPherson. Decision arrived at: No one to blame, vessel struck an uncharted rock.
Princess Mary, 126950, Victoria, and Henriette, 112254, Vancouver.	On September 25 collided in Vancouver harbour. Formal investigation was held at Victoria on October 18 and 23, before Capt. John D. MacPherson, assisted by Captains S. W. Buckram and D. S. Jones-Evans, acting as nautical assessors. <i>Finding.</i> —Both masters to blame for collision, for want of discretion, lack of patience, poor judgment and taking unnecessary risks. They are reprimanded and warned to be more careful in future. (Chs. Campbell, master of <i>Princess Mary</i> ; Otto Buckley, master of <i>Henriette</i> .)

SESSIONAL PAPER No. 21

STATEMENT of investigations into wrecks and casualties, etc.—*Continued.*

Name of ship, Official
No., and
Registered Port.

Royal Transport, 135895, On June 11 collided in Quebec harbour. Formal investigation was
West Hartlepool, and held at Quebec on June 15, 16 and 21, before Capt. L. A. Demers,
Korona, 133736, Malta. Dominion Wreck Commissioner, assisted by Commander E. G. O.
Elliott, R.N.R., and Captain Charles Koenig, acting as nautical
assessors.

Finding.—*Royal Transport* solely to blame. Master, Wm. Cook, has his certificate suspended for one month. Pilot's license of Arthur Lachance is suspended for two years and he is fined \$100 for contempt of court in not delivering certificate. One of the assessors, Commander Elliott, dissenting.

Singapore, 123729, On July 1 stranded near Little Metis, river St. Lawrence. Formal
London. investigation was held at Montreal on July 6 before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors.

British S.S. *Finding.*—Master, Fred Wm. Hartwell, showed poor judgment in navigating his vessel and he is reprimanded very severely.

Stewart W. and barges On July 20 collided near Brockville, St. Lawrence river. Formal in-
"Twin-Sisters," vestigation was held at Montreal on September 5, 6 and 25, before
"Minominee" and Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by
Captains Charles Lapierre and Francis Nash, acting as nautical
assessors.

"Kildonian", whilst in *Finding.*—*Both Stewart W. and Sin Mac* found at fault; *Stewart*
tow of tug "Sin Mac". *W.* violated art. 29, 37 of the Rules of the Board, and the master, Ernest Tremblay, is severely reprimanded; *Sin Mac* violated art. 25, 29, 28 and 37, and pilot Leduc is also severely reprimanded.

Scandinavian, 109441, On November 17 stranded at Grondines, St. Lawrence river. Formal
Glasgow. investigation was held at Montreal on November 23 and 26 and December 1, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors.

Finding.—Master, pilot and officers exonerated. Nature of obstacle which caused damage to vessel was not revealed or ascertained.

Stella Maris, 103767, On November 30 foundered at Pointe du Chêne, N.B., when being
Chatham, N.B. towed by the *Northumberland*. Formal investigation was held at Summerside on March 2, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains James H. Walsh and R. Campbell, acting as nautical assessors.

Finding.—Captain and officers of *Northumberland* blameless for sinking of *Stella Maris*. Accident was due to lack of knowledge and indifference on part of crew of *Stella Maris*.

Tunesie (Belgian Relief On October 28 collided in Montreal harbour. Formal investigation was
ship), and held at Montreal on October 30 and November 2, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains Charles Lapierre and Francis Nash, acting as nautical assessors.

Cabotia, 133825, *Finding.*—*Cabotia* to blame and master's certificate of Robert
Montreal. Laing is suspended for six months.

Turbinia, 112201, Stranded in Niagara river on June 30; on Centre island, July 1, and in
Hamilton. Toronto harbour on July 5. Formal investigation was held at Toronto on July 19, before Capt. L. A. Demers, Dominion Wreck Commissioner, assisted by Captains James B. Foote, and James Mc-Maugh.

Finding.—Grounding in Niagara river due to error of judgment on part of master, Arthur Jeffrey, in miscalculating force of current and wind. Stranding on Centre island due to master eliminating elementary factors in navigation. His certificate is suspended for one month. Master not in default for grounding in Toronto harbour.

Statement of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1917.

COASTING AND SEA-GOING WRECKS.

Date of Casualty.	Name of Ship. — Official Number.	Age of Ship.	Registered Port.	How Rigg'd. Iron or Wood. Steam or Sail.	Register Ton- nage.	Port Sailed From. — Port Bound To.	Place Where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
May 11.	Arammore. 98579	27	Ottawa.	Schr. . . Iron Sail	502	Pictou. Charlottetown	Charlottetown	Collided with pier. . D. McDonald.	.....	Part.
June 14.	Ambition. 112101	15	Lunenburg, N.S.	Schr. . . . Wood Sail	99	St. Johns, Nfld. Exploits, Nfld.	Notre Dame bay, Nfld.	Stranded. Chas. Rose.	.....	Part. \$495.
" 14.	Atlantic. 122143	11	Lunenburg, N.S.	Schr. . . . Wood Steam	67	Halifax Fouchu, C.B.	Bad Neighbor shoal, C.B.	Stranded E. J. Gilbert.	.....	Total. \$10,000.
July 13.	Acadian. 121258	9	Montreal	Schr. . . . Steel Steam	1457	Bilbao. Cardiff	5.72 w. 44 miles off Hornston Light-house.	Collided with Em- porte. G. G. Green.	.....	Total.
Aug. 26.	Ardgair. 136324	4	Greenock	Schr. . . . Steel Steam	3282 41	Montreal. Sydney, N.S.	Amherst isl'ds, Mag- dalen islands.	Stranded. W. Mackintosh.	.....	Slight damage.
Sept. 27.	Alford. 130617	19	Victoria.	Tug. . . . Wood Steam	37	Blubber Bay. Ladysmith	1/2 miles N.E. Point of Nelson island, Jarvis inlet.	Burnt. S. J. Holmes.	.....	Total. \$15,000.
Nov. 2.	Alcedo. 122650	12	Ottawa.	2 pole masts. Wood Steam	47	Nanaimo. Victoria.	Panther point, Wal- lace island, B.C.	Stranded. Art. F. Yates.	.....	Part.
" 28.	Acadian. 124258	9	Montreal. . . . .	..... Steel Steam	1457	St. Pierre. Halifax.	Sydney, N.S.	Sprung a leak. . . . . .....	.....	Part. \$1,000.
Dec. 31.	Associate. 131163	5	Lunenburg, N.S.	Schr. . . . Wood Sail	96	Burgeo, Nfld.	North Atlantic.	Life boat smashed and lights carried away. Missing. Capt. Walley.	.....	Part.
Jan. 8.	Bessie A. Crooks.	3	Bridgetown, Bdoes	Schr. . . . Wood Sail	196	Pernambuco. Barbadoes.	South America. . . . .	.....	.....	Total.

SESSIONAL PAPER No. 21

April 22..	Benin.....	10	Liverpool ..	Schr.....	2814 85	Liverpool ..	Between cape Race and Anticosti.	Damaged by ice.	Part.
	121067			Steel		Montreal		W. Jones.	
Aug. 10..	British.....	30	Barrington, N.S.	Schr.....	75 28	No. Ingonish, N.S.	Doctor's cove, N.S.	Stranded.....	Part.
	75724			Wood		Gloucester, Mass.		F. Nickerson.	
" 24..	British Columbia..	14	Vancouver.....	Schr.....	221	Seattle ..	Vancouver harbour.	Foundered.....	Part.
	119063			Sail		Vancouver.		J. Murdock.	
Jan. 22..	Carrie N Nelly....	1	Shelburne, N.S.	Schr.....	85	Cape Broyle.....	Lat. 41.27' N. Long	Damaged in gale	Part.
				Steel		Gibraltar.	26.10' W., No. At-	J. Evans.	Ship, \$500.
Feb. 3..	Cumberland Co	8	Parrishoro, N.S.	Schr.....	418 94	Gulfport, Miss.	lantic.	Stranded ..	Total.
	ounty.			Wood		Martinique.	Off Florida, Gulf of	B. Tower.	\$40,000,
Mar. 5..	Catherine ..	14	St. John, N.B.	Schr.....	126	Boston.....	Lat. 33.19' Long	Fore gaff and spanker	Part.
	112223			Wood		Madeira.	57 52' No. At-	gaff broken.	\$100.
April 10..	Cora May ..	23	St. John, N.B.	Schr.....	117	St. John, N.B.	Bay of Fundy, N.S.	Foundered....	Total.
	94758			Sail		Parrishoro, N.S.		M. Blenkborn.	\$1,500.
April 30..	Canada ..	16	Lunenburg, N.S.	Schr.....	199 42	Sancher.....	Sanjou, Dominican	Stranded.....	Total.
	111631			Wood		Baracoa, Cuba.	Republic.	Carl Bassa.	
May 1..	C. S. Jacques.....	8	Montreal.	Schr.....	1590	Rouen.....	At sea.....	Torpedoed.....	Total.
	129497			Steel		Tyne.		B. P. Powell.	3
" 2..	Carl S.....	3	Lunenburg, N.S.	Schr.....	81 96	Lunenburg.....	Jed lore rock, N.S.	Stranded.....	Part.
	134054			Wood		Fishing.		Kenneth Silver.	\$100.
" 15..	Cape Corso.....	12	Greenock.....	Schr.....	2510 24	Newport, Eng ..	2 miles E of cape	Stranded.....	Part.
	117396			Sail		Montreal.	Chat, river St	A. J. M. Hender-	\$31,000.
June 5..	Catherine.....	14	St. John, N.B.	Schr.....	196 20	Boston ..	Lawrence.	son.	Total.
	112233			Wood		Turks island.	Turks island, North	Stranded ..	
" 16..	Clematis.....	19	North Shields ..	Schr.....	2160	St. Nazaire, France.	Atlantic.	C. A. Sparks.	
	109887			Sail		Louisburg.			Part.
" 29..	Cruizer ..	22	Halifax.....	Schr.....	21	Louisburg ..	8 miles east off Egg	Collided with <i>Fea</i>	Slight damage.
	104606			Steel		Halifax.	island, N.S.	<i>Jum.</i>	
Aug. 27..	Cyrene.....	34	Lunenburg ..	Schr.....	93	Charlottetown ..	Entrance to Pictou	D. C. Harris.	Total.
	85649			Wood		Pictou.	harbour, N.S.	Collided with <i>Aran</i>	\$3,000.
" 26..	Cassiar.....	27	Vancouver ..	Sloop.	383	Vancouver.....	Pomphraspass, B.C.	F. V. Murphy.	Part.
	103472			Sail		Kingcome.		Stranded ..	\$6,000.
Oct. 15..	Camosun ..	12	Vancouver.....	Schr.....	793 72	Vancouver.....	North Bentinck	Stranded ..	Part.
	121201			Steel		"	arm, B.C.	J. H. Browne.	\$11,000.
				Steam					

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1917—*Continued.*

COASTING AND SEA-GOING WRECKS—*Continued.*

Date of Casualty.	Name of Ship. Official Number.	Age of Ship.	Registered Port.	How Rigged. Iron or Wood. Steam or Sail.	Register Ton- nage.	Port Sailed From. — Port Bound To.	Place Where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
Nov. 11..	C. E. Tanner..... 103806	9	Pictou.	Wood Steam	558	Halifax. Liverpool, N.S.	North Atlantic.	Stranded. Jas. McLeod.	.....	Total.
Dec. 6..	Curaca..... 135178	5	London.....	F. & A... Steel	4067	St. John, N.B. . . . Halifax.	Halifax harbour . . .	Submerged by ex- plosion of <i>Mont Blanc</i> .	45	Part.
" 6..	Calonne..... 110121	19	London. . .	Schr..... Steel	2581	Southampton..... Sealed orders.	Halifax harbour . . .	Damaged by explo- sion of <i>Mont Blanc</i> .	12	"
" 8..	Cadorus... .. 126886	25	Washington . . .	Schr. . . . Iron	1802	Montreal. New York.	Esquimaux point, Gulf St. Lawrence	J. H. Telfer. Stranded. ....	.....	"
Jan. 23..	Dorothy Duff..... 117164	11	Sydney, N.S.....	Schr..... Wood	152	.....	Lat. 39.20' N, Long. 34.00' W., North Atlantic.	Damaged in gale..... Geo. B. Dean.	.....	Part. Ship, \$500. Cargo, \$2,250.
" 24..	Dunure..... 78853	35	Sydney, N.S.....	Bkt..... Wood	176	Santa Pola..... St. Johns, Nfld.	Lat. 31 N., Long. 15 W., North At- lantic.	Loss of sails and part of cargo. R. Owen.	.....	Part.
" 31..	Dundee. 112208	11	Hamilton, Ont....	F. & A... Steel	1431	London..... Swansea.	.....	Torpedoed. R. N. Anderson.	1	Total.
April 12..	Doris V. Myra.... 130463	6	Lunenburg, N.S...	Schr..... Wood	99.05	Lunenburg..... Fishing.	75 miles southeast of Halifax, North Atlantic.	Collided with <i>Car- pathia</i> . C. Myra.	.....	Total. Ship, \$10,000. Cargo, \$2,800.
" 22..	Durley Chine..... 132887	4	Ottawa.....	Schr..... Steel	1158	Halifax..... Norfolk, Va.	72 miles S., 44 E. Mag., North Atlantic.	Collided with <i>Har- lem</i> . J. F. Chapman.	.....	Total. \$400,600.
May 15..	Dreadful..... 131148	5	Vancouver.....	Ketch.... Steel	92	Victoria..... Esquimalt.	Esquimalt harbour..	Collided with <i>Lob- nitz</i> . Capt. Barberi.	.....	Part.
" 16..	Dorothy Duff..... 117164	11	Sydney, N.S.....	Schr. . . . Wood	152	.....	.....	Sunk..... Geo. B. Dean.	.....	Total.

June 6..	Daring..... 123375	10	Vancouver.....	54-82	Vancouver..... "	False creek.....	Stranded..... Isaac Forsyth.	Part. \$1,000.
" 15..	Deliverance..... 131204	3	Liverpool, N.S.....	78	Halifax.....	Halifax harbour....	Collided with <i>Regin</i> and sank. H. H. Branner.	Total. \$125,000.
" 23..	Davis McNab..... 130589	5	Halifax.....	34	Halifax..... "	" "	Damaged by fire..... W. W. Graham.	Part.
Dec. 6..	Douglas H. Thomas 101291	25	Sydney, N.S.....	98	Sydney..... Halifax.	" "	Damaged by explo- sion of <i>Mont Blanc</i> .	Part. \$1,200.
" 10..	Douglas Adams.. 116540	12	Lunenburg, N.S...	99-23	Halifax..... Curling, Nfld.	Point Michaud, N.S.	Stranded..... J. N. Petipas.	Total. Ship, \$15,000, Cargo, \$800.
" 11..	D. A. Gordon..... 129479	7	Montreal.....	1434	Marseilles..... Melilla.	" "	Forpedoe..... J. A. McLeod.	Total.
Jan. 31..	Empress of Japan.. 989111	26	London.....	3039	Hong Kong..... Vancouver.	Trail inlet, N.W. one mile.	Collided with <i>Bel-</i> <i>ridge</i> . W. D. Hopecraft.	Part.
June 7..	Eva Marie..... 88370	4	Victoria.....	60-05	Vancouver..... Quatsino.	Helmeket island...	Stranded..... S. Noel.	Total.
" 18..	Edgar W. Murdock 122009	14	Rockport, Me. ...	121-05	Barbadoes..... St. John, N.B.	Old Proprietor shoal, N.B.	Stranded..... E. Z. Connisky.	Total. Ship, \$100,000, Cargo, \$200,000.
June 27..	Earl Grey..... 122009	9	Lunenburg, N.S...	96	Halifax..... Cushing, Nfld.	Point Pleasant..... Shoal, N.S.	Stranded..... J. McLeod.	Part. \$1,200.
Aug. 12..	Erin..... 121761	28	Vancouver.....	91-80	Vancouver..... Anacortes.	False narrows..... Vancouver Hr.	Stranded..... H. J. McLellan.	Part.
Feb. 8..	F. M. Toro..... 130728	5	Lunenburg, N.S...	99-66	Burin, Nfld..... Lunenburg.	Lat. 30°58' N..... Long. 36°00' W. N. Atlantic.	Abandoned..... C. Conrad.	Total: Ship, \$12,- 000; cargo, \$350.
" 25..	F. H. Phippen..... 130292	7	Vancouver.....	10	Prince Rupert .. Peary Passage.	Peary passage.....	Stranded..... E. Swendsen.	Slight damage.
Aug. 9..	F. A. J. E..... 133898	6	Parrsboro, N.S. ...	356	New York..... Norfolk.	Newport News, Va..	Collided with <i>Helen</i> V. J. Hertle.	Part.
" 14	Floridal..... 134099	3	Vancouver.....	11-04	Prince Rupert .. "	6 miles W.S.W. of Triple island.	Foundered..... C. Knightall.	Total.
Oct. 21..	Frank Seavy..... 76742	28	Boston.....	336	Caspe..... New York.	10 miles E. of Sambro Lt., No. Atlantic.	Masts and gear car- ried away. W. Kehin.	Part. \$9,000.
Dec. 6..	F. W. Roebeling.. 113782	.....	Halifax.....	78	Halifax harbour .. "	Halifax harbour....	Damaged by explo- sion of <i>Mont Blanc</i> . Chas. Wood.	Part. \$8,000.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1917—*Continued.*

COASTING AND SEA GOING WRECKS *Continued.*

Date of Casualty.	Name of Ship. — Official Number.	Age of Ship.	Registered Port.	How Rigged. Iron or Wood. Steam or Sail.	Register— Tonnage.	Port Sailed From. — Port Bound To.	Place Where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss, Total or Partial.
Feb. 13.	Gladys & Lillian.	6	Halifax	Schr. Wood Sail	103 84	Liverpool, N.S. St. Thomas, W.I.	37 23' N. Lat., 59 32' W. Long., No. Atlantic.	Abandoned. A. Croft.	.....	Total.
June 9.	Glen Rosa 111982	15	Vancouver	Tug. Wood	12	.....	Prince Rupert Harbour.	Stranded. E. McCoskrie.	.....	Total.
Aug. 8.	Geo. M. Warner 83437		Weymouth, N.S.	Steam	94	Weymouth. Yarmouth, N.S.	North Atlantic.	Missing. A. J. Haycock.	5	Total. \$5,000.
" 16.	Glyndon. 103752	20	Lunenburg	Schr. Wood Sail	99 45	Sydney, N.S. Summerside.	Tryon's shoul, P.E.I.	Stranded. L. Razavet.	.....	Part.
Sept. 10.	Geo. Ewart. 134836	4	Sydney, N.S.	Schr. Wood Sail	148	Rencontre, Nfld. Gibraltar.	North Atlantic.	Collided with unknown vessel. Chs. Lake.	.....	Total.
Oct. 20.	Gray.	8	Workington, Eng.	Schr. Steel	280 20	Victoria. Smith's Inlet.	Calvert island.	Stranded. G. J. Dawes.	.....	Part.
Dec.	Geo. H. Orr		American.	Steam	.....	Montreal. New York.	Savage harbour, P.E.I.	Stranded. . . . .	.....	Part.
April 29.	Hazel L. Ritecy. 126102	9	Lunenburg, N.S.	Schr. Wood Sail	92 44	Rose Blanche, Nfld. Gloucester, U.S.A.	Mordgen rock, N.S.	Stranded. E. Young.	.....	Part. Ship, \$2,000; cargo, \$2,000.
May 2.	Henry L. Marshall. 214240	1	Gloucester, U.S.A.	Schr. Wood Gas.	42	Gloucester. Liverpool, N.S.	Liverpool, N.S.	Stranded. M. Sears.	.....	Part. Ship, \$3,500; cargo, \$400.
Sept. 25.	Henrietta. 112254	43	Vancouver	Schr. Iron	518	Vancouver.	Vancouver harbour.	Collided with <i>Princess Mary</i> . O. Buckely.	.....	Part.
Dec. 11.	Halifax. 95099	37	Halifax	Schr. Steel	1078	New York. Bordeaux.	Sailed from Azores	Missing. W. A. Clarke.	.....	Total. \$300,000.

SESSIONAL PAPER No. 21

May 3..	Icolite..... 134514	1	Sarnia, Ont....	Steel... .. Steam	1548-88	New York Montreal.	50 miles S.E. of Cap Rosaris, Gulf of St. Lawrence.	Damaged by ice. Geo. Findley.	.....	Part.
Oct. 27..	Iperia..... 110544	18	Montreal.....	Schr..... Steel	2061	Blyth..... Sealed orders.	East coast of Eng- land.	Collided with <i>Giralda</i> . A. J. Anderson.	.....	Part.
Dec. 17..	Ida M. Clark..... 111687	15	Halifax.	Schr..... Wood	99	Boston..... Liverpool, N.S.	Point Negro, N.S....	Stranded..... J. A. Lake.	.....	Part. \$1,500.
Jan. 25..	Jennie E. Duff .. 130467	6	Lunenburg, N.S..	Schr..... Wood	1199-31	Grand Banks, Nfld.. St. Johns, Nfld.	Lisbon, Portugal....	Missing..... Jos. Mason.	.....	Total: Ship, \$9,000; cargo, \$500.
Feb. 10..	Joseph P. Mes- quita.	6	Gloucester, U.S.A.	Schr..... Wood	78	Boston..... Fishing.	North Atlantic....	Loss of sails and gear. P. F. Richard.	1	Part.
Oct. 11..	Jennie Myrtle.... 103414.	12	Lunenburg, N.S..	Schr..... Wood.	99-03	Halifax..... Salmon bay	Entrance to Salmon bay.	Stranded..... Sam. Shaw.	.....	Total. Ship: \$3,000. Cargo: \$7,500.
Dec. 6..	J. A. McKee..... 125442	10	Sault Ste. Marie..	F. & A.. Steel.	1375	Sydney, N.S.. Halifax.	Halifax harbour....	Damaged by explosion of <i>Mont Blanc</i> , J. F. Chapman.	.....	Part. \$125,000.
" 7..	Jane Cox..... 138201.	2	Shelburne, N.S....	Schr..... Wood.	94	Port Clyde, N.S.... Barbadoes.	Lat. 38.11' N., Long. 62.39' W., North Atlantic.	Loss of part of cargo, R. McAlpine.	.....	Part. \$300.
" 10..	Joseph P. Mas- quita.	6	Gloucester, U.S.A.	Schr..... Wood.	78	Gloucester..... Fishing.	White Head harbour, N.S.	Stranded..... J. H. Cass.	.....	Total. Ship: \$15,000. Cargo: \$2,500.
" 16..	J. B. Young..... 126584.	8	Lunenburg, N.S..	Schr..... Wood.	99-72	Lunenburg, N.S.. Barbadoes.	Lat. 39.30' N., Long. 60.40' W., North Atlantic.	Damaged in gale. A. Himmelman.	.....	Part.
Feb. 26..	King Josiah .. 125965.	9	Parrsboro, N.S....	Schr..... Wood.	147	Liverpool, N.S.. Barbadoes.	Lat. 35.40' N., Long. 62.30' W., North Atlantic.	Loss of sails and part of cargo. H. Hartling.	.....	Part.
Mar. 11..	Kwasind..... 104263.	23	Quebec.....	F. & A.. Steel.	1375	Bilbao .. West Hartlepool.	.....	Sunk..... F. Shayter.	12	Total.
June 11..	Korana..... 137736.	16	Malta	Schr..... Steel.	2387	Malta..... Montreal.	Off Quebec.....	Collided with <i>Royal Transport</i> . R. Rosekelly.	.....	Part.
July 25..	Kilbergen..... 140299.	3	London.....	Schr..... Steel.	2964	London..... Montreal.	Lat. 47.39' N., Long. 59.30' W., Cabot Strait.	Collided with <i>Heath- cote</i> . J. S. Ledsome.	.....	Part.
Aug. 3..	Katie H	9	Montreal.....	Barge.... Wood.	370	Montreal..... Quebec.	Below Sorel.....	Collided with <i>Jelia</i> .. L. Lalonde.	.....	Part. \$2,500.
Nov. 13..	Katie H..... 125998.	9	"	Barge.... Wood.	370	Escoumains..... Levis.	La Traverse	Foundered..... L. Lalonde.	.....	Total. Ship: \$9,000. Cargo: \$500.
Jan. 19..	Lillian H..... 133894.	1	Parrsboro, N.S..	Schr..... Wood.	476	Whitehaven .....	.....	Torpedoed..... E. D. Brown.	.....	Part.
April 14.	Leta J. Schwartz.. 130909.	5	Lunenburg, N.S..	Schr..... Wood.	95	Santa Pola..... Lunenburg.	Lat. 21.22' N., Long. 52.43' W., North Atlantic.	Damaged in gale..... H. Schwartz.	.....	Part.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1917—*Continued.*

COASTING AND SEA GOING WRECKS—*Continued.*

Date of Casualty.	Name of Ship. — Official Number.	Age of Ship.	Registered Port.	How Rigg'd. Iron or Wood. Steam or Sail.	Register Tonnage.	Port Sailed From. Port Bound To.	Place Where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
May 3.	Lord Antrim 113518.	15	Belfast.	Schr. Steel.	2773	Dublin Glasgow.	3 miles S.W. of Fourchu, C.B.	Stranded. Jas. Aiken.	.....	Part.
July 26.	La Have Packet. 88316.	33	Lunenburg, N.S.	Steam. Schr. Wood.	67	Sydney, N.S. Charlottetown, P.E.I.	Fifteen Points, P.E.I.	Stranded. T. G. Buffit.	.....	Part. \$630.
" 27.	Lucerna 99437.	25	Liverpool.	3 masts. Steel.	2071	North Shields. Montreal.	Cape St. Charles. River St. Lawrence.	Stranded. J. Shotton.	.....	Part.
Aug. 1.	Lotitia. 133033.	5	Glasgow.	Steam. Schr. Steel.	5763	Liverpool. Halifax.	Portugese Cove. Halifax harbour.	Stranded. W. McNeil.	1	Total. \$2,000,000.
" 10.	Leah D. 100077.	26	St. John, N.B.	Steam. Schr. Wood.	48	Economy, N.B. St. John, N.B.	Half way between Cape Dor and Harborville, N.S.	Stranded. E. Sabeau.	.....	Part. Ship: \$600. Cargo: 300.
" 23.	Lena 115850.	15	London.	Sail. Schr. Steel.	892	Tyne. Louisburg.	Lat. 45.57' N., Long. 59.91' W., North Atlantic.	Stranded. H. J. Charters.	.....	Part.
Dec. 6.	Lola R. 131078.	5	Lunenburg, N.S.	Steam. Schr. Wood. Sail.	13-34	Herring Cove, N.S. Halifax.	Halifax harbour.	Blown to pieces by explosion of <i>Mont Blanc</i> . John Laller.	.....	Total, \$500.
Feb. 3.	Manchester Citizen. 124299.	4	Manchester.	Schr. Steel.	2725	Manchester Halifax.	Lat. 45° 57' N., Long. 48.47' W., North Atlantic.	Collided with unknown vessel. C. H. Scott.	.....	Part.
" 6.	Mayola. 126588.	7	Lunenburg, N.S.	Steam. Schr. Wood.	119-39	St. John's, Nfld. Gibraltar.	.....	Sunk. John Hamilton.	.....	Total. Ship: \$19,000. Cargo: \$5,000.
Mar. 3.	Maggie Belle 116516.	13	" " " " " " " "	Sail. Brig. Wood. Sail.	99-25	Santa Pola. St John's, Nfld.	Lat. 38-20' N., Long. 32.00' W., North Atlantic.	Foundered. J. J. Connor.	.....	Total.

SESSIONAL PAPER No. 21

"	6.	Marion Helena.... 134407.	2	"	"	Schr.. .. Wood. Sail.	91-15	Santa Pola..... Mahone Bay, N.S.	Gibraltar bay.. ..	Foundered .....	.....	Total. Ship: \$12,000. Cargo: \$300. Part.
"	15.	Mary & Mildred.. 130941.	5	"	"	Schr..... Wood. Sail.	99-52	Cadiz..... St. John's, Nfld.	Lat. 38.20' N., Long. 45.10' W., North Atlantic.	Main boom and gaff carried away. H. Williams.	.....	Part.
April	9.	Mildred G. Myers. 121996.	10	Lunenburg, N.S.	Schr..... Wood. Sail.	55	White Head, N.S.. Halifax.	Halifax harbour....	Stranded..... F. Myers.	.....	.....	Part. \$1,000.
April	18	Maskinongé	5	Liverpool.. ..	Schr..... Steel. Steam.	2672	Louisburg, N.S. St. John, N.B.	St. John harbour....	Stranded	B. R. Griffiths.	.....	Part. \$2,000.
April	23.	Mary & Mildred.. 130841.	5	Lunenburg, N.S.	Schr..... Wood. Sail.	99-52	Placentia, Nfld..... St. John's "	St. Johns harbour, Nfld	Foundered	H. Williams.	.....	Total.
May	6.	Mark A. Tobin.... 134393.	3	"	Schr.. .. Wood Sail.	99-17	Lunenburg..... Halifax.	Off Sambro Island...	Stranded.....	K. Iverson.	.....	Total. Ship: \$12,000. Cargo: 15,000. Part.
June	4.	Marmion..... 102622.	24	Glasgow.....	F. & A. ... Iron. Steam.	24	Tod Inlet..... Rivers Inlet.	Schooner Passage, B.C.	Stranded.....	J. Hunter.	.....	Part.
June	5.	Maisonneuve..... 138224.	1	Montreal.....	Wood Steam.	45-73	Montreal	2 miles opposite Con- trecoeur, Riv. St. Lawrence.	Collided with ' Im- peroyal". J. Paquette.	.....	.....	Part. \$1,000.
July	7.	M. M. Gardener .. 130732.	5	Lunenburg, N.S.	Schr..... Wood Sail.	100	St. Johns, Nfld..... Lunenburg.	Lunenburg harbour .	Stranded.....	M. Tobin.	.....	Part. Ship: \$500. Cargo: 200. Total.
Aug.	26.	Minas Queen 133897.	1	Parrsboro, N.S.	Schr..... Wood. Sail.	492	Rockport	New York.	Sunk.....	Capt. Homer.	6	Total.
Sept.	4.	Melampe 74550.	4	Vancouver.....	Iron. Steam.	1561	Vancouver..... No. Vancouver.	North Vancouver.	Collided with " Qua- tram". P. Farrell.	.....	.....	Part.
Sept.	24.	Marion A. Silver.. 130829.	5	Lunenburg, N.S.	Schr..... Wood. Sail.	99-34	Grand Banks, Nfld.. "	Lat. 43, N. Long. 40, W. No. Atlantic.	Collided with "Mar- garet Lake". P. Bonfield.	.....	.....	Total. Ship: \$18,000. Cargo: 1,000. Part.
Nov	23.	Mildred..... 122314.	10	Sydney, N.S.....	F. & A. ... Wood. Sail.	166	St. Johns, Nfld..... Gibraltar.	North Atlantic.	Damaged in gale....	Chs. Welher.	.....	Part.
Nov.	24.	Matanzas..... 130822.	6	Lunenburg, N.S.	Schr..... Wood. Sail.	95-92	Lunenburg	Bridgetown, Bdoes.	Missing	S. Oeckle.	7	Total.
Dec.	6.	Mont Blanc.....	18	St. Nazaire, France	Steel. Steam.	2252	New York..... Bordeaux.	Halifax habour.	Collided with "Imo", and exploded. A. Lamedec.	.....	.....	Total. Ship: \$1,000,000. Cargo: 4,000,000. Part. \$75,000.
Dec.	22.	Matañzas..... 92888.	34	New York.....	Steel. Steam.	2006	New York..... Bordeaux.	Mars Head, N.S., North Atlantic.	Stranded.....	S. M. Houston.	.....	Part.
Jan.	17.	No. 6 Dredge. ... 138258.	.....	Lunenburg, N.S.	Dredge.. Iron. Sail.	370-10	Isaac Harbour..... Sydney, N.S.	Shag rock, N.S. . . .	Foundered.....	Capt. Hatfield.	9	Total.

9 GEORGE V, A. 1919

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1917—*Continued.*

COASTING AND SEA GOING WRECKS—*Continued.*

Date of Casualty.	Name of Ship. — Official Number.	Age of Ship.	Registered Port.	How Rigg'd. Iron or Wood. Steam or Sail.	Register Ton- nage.	Port Sailed From. — Port Bound To.	Place Where Casualty Happened.	Particulars of Casualty. Name of Master.	Live? Lost?	Loss Total or Partial.
April 22.	Neepawah 102579.	14	Hamilton	Schr. Steel. Steam.	1190	Swansea. Rouen.	.....	Sunk. Fred Scott.	.....	"
June 10.	Njord 134522.	31	Sydney, N.S.	..... Wood. Steam.	254.45	North Sydney. St. John's, Nfld.	40 miles E. & N. of St. Pierre-Miquelon.	Burnt. Jos. Turner.	.....	Part. \$1,000.
July 8.	New England. 85634.	34	St. Johns, Nfld.	Schr. Wood. Sail.	58	Sydney, N.S. Charlottetown, P.E.I.	Dog Island shoal, Lennox passage.	Stranded. D. Munroe.	.....	Part.
Oct. 6.	Noreg.	1	Yarmouth, N.S.	Sloop. Wood. Steam.	178.31	New York Harbour Grace, Nfld.	Western Head light, Shotts, Nfld.	Stranded. L. J. McKinnon	.....	Total.
Nov. 7.	Nanoose 122397.	9	Victoria, B.C.	Tug Iron. Steam.	166	Vancouver. Ladysmith.	Portier pass, gulf of Georgia.	Stranded. Thos. Manion.	.....	Slight damage.
June 10.	Orontes. 105049.	22	Vancouver.	Schr. Iron. Steam.	76	Vancouver. Mulgrave, N.S.	Horse island, N.S.	Stranded. J. W. Reynolds.	.....	Part. \$10,000.
July 16.	Oregon 126064.	9	Charlottetown, P.E.I.	Schr. Wood. Sail.	46	Canso, N.S. Shelburne, N.S.	Entrance to White head, N.S.	Stranded. A. J. Pelrine.	.....	Total.
Jan. 21.	Prince John 129472.	7	Prince Rupert, B.C.	Schr. Steel. Steam.	540	Prince Rupert "	Maple island, B.C.	Stranded. A. M. Davies.	.....	Slight damage.
Jan. 26.	Prince John 129472.	7	Prince Rupert, B.C.	Schr. Steel. Steam.	540	Prince Rupert Juneau.	Wrangle narrows.	Stranded. A. M. Davies.	.....	Part.
Jan. 28.	Perce 138192	7	Liverpool, N.S.	Schr. Wood. Sail.	368.03	Halifax Santos.	Lat. 2°49' N. Long. 27°16' W., No. Atlantic.	Lost C. J. Robert.	.....	Total.
Feb. 7.	Princess Patricia 115685	15	Victoria	Schr. Steel. Steam.	535.42	Nanaimo. Vancouver.	Point Grey.	Stranded. J. W. P. Ritchie.	.....	Part.

SESSIONAL PAPER No. 21

Feb. 18..	Plymouth..... 80801	38	Windsor, N.S....	Barge.... Wood.	1312	New York..... St. John, N.B.	New York.....	Collided with barge.... <i>Barry</i> .	Part \$600.
Mar. 23..	Prince Rupert ... 129743	7	Newcastle	Schr.... Steel	1626	Amyot, B.C.... Seattle, Wash.	Glen Inlet, B.C....	Stranded.... J. Mackenzie.	Part.
April 24..	Prince Albert. 99584	25	Prince Rupert	Steam. Steel.	587	Vancouver.... Ocean Falls, B.C.	Margaret, bay, B.C.	Stranded.. W, S. Morehouse.	Part.
May 11..	Princess Sophia.... 130620	5	Victoria.....	F. & A.... Steel.	1469	Skagway..... Alaska.	Wrangle narrow, B.C.	Stranded.. ... L. P. Locke.	Part,
May 22..	Pharaon..... 121953	18	Vancouver....	Schr..... Wood.	1730	Prince Rupert ... Fishing.	Queen Charlotte is- land, B.C.	Foundered.... D. Malone.	Total. Ship. \$8,000. Cargo: \$2,000.
June 2..	Premier..... 98964	26	London.	Gas. Schr.....	18777	Halifax. Halifax.	Sambro, N.S..	Stranded..... G, Hennekey.	Total.
June 16..	Princess Maquina. 133769	4	Victoria	Steam. Schr.....	97860	Victoria..... Quatsimo.	Lat. 50° 01' N., Long. 127° 33' 05' W., Pa- cific ocean.	Stranded.. ... E. Gilliam.	Slight damage.
July 20..	Petrel..... 121974	11	Victoria.....	Steam. Steel.	58	Nanaimo..... Victoria.	Fulford reef, Dis- covery island.	Stranded.... Hugh Fletcher.	Part.
Aug. 27..	Princess Mary..... 109860	29	Vancouver	Schr.... Steel.	892	Vancouver.... Ocean Falls B.C.	Off Jane island, Fin- layson channel.	Collided with <i>Jefferson</i> .	Slight damage.
Sept. 25..	Princess Mary..... 126950	7	Victoria.....	Steam. Schr.....	134564	Vancouver.... Victoria.	Vancouver harbour.	Collided with <i>Henn-</i> <i>riette</i> .	Part.
Nov. 12..	Prince John..... 129442	7	Prince Rupert	Schr..... Steel.	533	Prince Rupert... Aliford Bay.	Aliford bay, B.C....	Stranded.. ... C. Campbell.	Part.
Nov. 13..	Prince George..... 129748	7	Newcastle	Steam. Steel.	1625	Prince Rupert	Vancouver....	Collided with Ferry.... boat.	Part.
Dec. 20..	Prince Albert..... 99584	25	Prince Rupert	Schr..... Steel.	587	Prince Rupert	Off Lockport.....	Stranded..... B. C. H. Nidden.	Slight damage.
Feb. 17..	Seth Jr..... 126939	6	Halifax.	Steam. Schr.....	199	St. Johns, Nfl..... Pernambuco.	15 miles S.S.W. off cape Race, Nfl.	Damaged in gale.... H. Keeping.	Part.
April 13..	Strathcona..... 110354	17	Hamilton....	Sail. Schr.....	1465	Tyne..... Marseilles.	.....	Torpedoed.....	Total.
April 24..	Stella Maria..... 117528	35	St. Johns, Nfl.....	Steel. Steam.	54	Halifax	Petrie reef, Sydney harbour.	Stranded.. ... A. W. Breunen.	Part. \$300.
May 8..	Sam Slick. 107301	19	Windsor, N.S....	Schr..... Wood. Sail.	90	St. John, N.B..... Boston, Mass.	8 miles N.E. from Cape Ann, U.S.A.	Foundered..... J. E. George.	Total. \$3,500.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1917—Continued.

COASTING AND SEA GOING WRECKS—Continued.

Date of Casualty.	Name of Ship. Official Number.	Age of Ship.	Registered Port.	How Ripped. Iron or Wood. Steam or Sail.	Register Ton- nage.	Port Sail From. — Port Bound To.	Place Where Casualty Happened.	Particulars of Casualty. Name. of Master.	Lives Lost.	Loss. Total or Partial.
May 19.	Samual Marshall. 107426	29	Brockville, Ont.	Wood.	540	Ashtabula Chicoutimi.	West cape, Saguenay river.	Stranded. W. A. Tullock.	.....	Part. \$4,000.
July 1.	Singapore 123729	11	London	Steam. Schr.	2736	Belfast Quebec.	14 miles E. off Little Metis, river St. Lawrence.	Stranded. F. W. Hatwell.	.....	Part.
July 26.	Sylph 756	23	St. Johns, Nfld.	Steam. Schr.	7607	Sydney, N.S. Summerside, P.E.I.	Hillsborough bay, Northumberland, Str.	Stranded. Jos. Troke.	.....	Part.
Nov. 17.	Scandinavian 109441	19	Glasgow	Sail. Schr.	7729	Liverpool. Montreal.	Cap à la Roche, riv. St. Lawrence.	Stranded. J. M. Reith.	.....	Part.
Ndv. 22	Spokane 117116	15	New York	Steam. Schr.	1350	Seattle, Wash. Ocean Falls, B.C.	Idol Point, Seaford channel, B.C.	Stranded. A. McKay.	.....	Part.
Dec. 6.	St. Bernard. 107570	16	Parrsboro, N.S.	Steam. Schr.	123	..... Demerera.	Halifax harbour	Blown to pieces by explosion of "Mont Blanc".	3	Total. \$12,000.
Dec. 6.	Shianne 130958	6	Lunenburg, N.S.	Sail. Schr.	21	Petit de Grat, N.S. Port Hawkesbury, N.S.	Port Hawkesbury	Jos. Evans. Stranded.	.....	Part. \$400.
Dec. 6.	Stella Maris. 117528	35	St. Johns, Nfld.	Gas Schr.	54	Halifax Harbour	Halifax harbour	A. Goyette. Damaged by explo- sion of "Mont Blanc".	9	Part.
March 28.	Triumph. 125067	10	Grimsby, B.C.	Wood Sail	124	Halifax. Fishing.	Lawrencetown head, N.S.	A. W. Brennan. Stranded.	.....	Total. \$10,000.
April 8.	Thomas. 131929	9	Shelburne, N.S.	Ketch. Steel	115 09	Belleville, Nfld. Rose Blanche, Nfld.	.....	D. Myhre. Sunk.	.....	Total. Ship: \$16,000. Cargo: \$700.
April 15.	Thos. Mason 133755	13	St. John, N.B.	Steam Wood Sail	21	St. John, N.B. Black River, N.B.	Near Barber rock	Capt. Keeping. Stranded.	11	Part. \$700.

SESSIONAL PAPER No. 21

May 23..	Tues.....	24	Victoria, B.C.....	Schr.....	441	Victoria Port Alice.	Arnold rock, B.C....	Stranded.....	Slight damage.
"	95929			Iron				C. P. Kinney.	
July 15..	Thomas J. Drummond. 126863	7	Sault Ste. Marie, Ont.	2 masts... Steel	1664	Levis..... Sydney, N.S.	Magdalen islands....	Stranded..... W. J. Davies.	"
August 4..	Tuscania.....	3	Glasgow.....	Schr..... Steel	8621	Glasgow..... Halifax.	Lat. 44.46' N., Long. 61.31' W., No. Atlantic. Point Grey.	Stranded..... J. L. Henderson.	Part. \$5,000.
Oct. 16..	Transfer No. 4 134031	4	Victoria, B.C.....	Barge.... Steel	895	Vancouver..... Ladysmith.		Stranded..... J. Newman.	Part.
April 9..	Una..... 121699	12	Yarmouth, N.S....	Sloop..... Wood	10-27	Lockeport, N.S..... Liverpool, N.S.	Off Western Shoal, N.S.	Foundered.....	2 Total.
May 19..	Uruguay.....	22	Charlottetown, P.E.I.	Schr..... Wood	97	Halifax..... Demerara.	Lat. 36.37' N., Long. 63.00' W., No. Atlantic.	Damaged in gale.... W. Zinck.	Part.
Oct. 9..	Vidette..... 107869	15	Dawson	Sail	159	White Horse..... Lower LeBarge.	14 miles above lower LeBarge.	Foundered..... J. D. Douglas.	Total.
Feb. 13..	W. R. Lord	5	Prince Rupert ...	Sloop..... Wood	27-62	Prince Rupert "	Dead Tree point, B.C.	Stranded..... J. Robbins.	Part.
Feb. 25..	Winona..... 122851	11	Hamilton	F. & A.... Steel	1327	Sunderland..... Havre.	North Atlantic.....	Stranded..... R. L. Anderson.	"
May 12..	W. M. Richard....	6	Annapolis Royal, N.S.....	Schr..... Wood	323	Mobile..... Pointe a Pitre, Guadeloupe.	Lat. 28.44' N., Long. 77.10' W., No. Atlantic.	Sprung a leak. Z. H. Richard.	"
May 14..	William Edwards..	..	Sydney, N.S.	Sail	831	Sydney..... Newfoundland.	10 miles off cape Pine, Nfld.	Foundered..... John Dicks.	Total.
June 11..	Winnie..... 121838	11	St. John, N.B....	Steam.	17	Ker's Brook..... Parrsboro.	2 miles S. off Sambro light, N.S.	Foundered..... J. E. George.	Total. \$3,500.
Aug. 21..	William Gertrude..	9	Parrsboro, N.S....	Schr..... Wood	272	Preston..... West Africa.		Sunk..... W. Roberts.	Total.
Aug. 27..	Waconda..... 102577	14	Hamilton, Ont....	F. & A.... Steel	996	Swansea..... Rabat.	60 miles W. of Scilly isles.	Damaged in gale....	1 Part.
Sept. 18..	Willie B..... 73962	41	Halifax.....	Schr..... Wood	39	Halifax..... Liverpool, N.S.	Off port Medway....	Dismasted..... R. H. Corkum.	"
Oct. 28..	Wm H. Murray ..	24	St. John, N.B. ..	..... Wood	51	Halifax Harbour .. "	Halifax harbour....	Collided with "Bram- ble Leaf". W. Sitband.	1 Total. \$14,000.
Nov. 25..	War Leader.....	1	Washington	Schr..... Steel	1395	Cleveland..... Chatham, N.B.	Quebec harbour....	Stranded..... D. M. Foote.	Part.

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1917—Continued.

INLAND WATERS WRECKS.

Date of Casualty.	Name of Ship. Official Number.	Age of Ship.	Registered Port.	How Rigg'd. Iron or Wood. Steam or Sail.	Register Ton- nage.	Port Sailed From. Port Bound To.	Place Where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
June 1.	Assiniboia... 125984	10	Montreal.....	Schr.. Steel Steam	2486	Port McNicoll	Collingwood.....	Foundered..... J. McCarmel.	...	Part. \$1,000
June 29.	A. E. Ames... 114449	14	Newcastle.....	Steel Steam	1019.83	Port Colborne... Montreal.	22 miles S.W. from point Peter, lake Ontario.	Collided with <i>Keppell</i> . W. H. Montgome- ry.	.....	Part.
July 28.	A. McVittie.... 138491	27	Montreal.....	Wood Steam	945.16	Montreal... Oswego.	Croils island, lake Ontario.	Stranded..... A. Lalonde.	...	Slight damage.
Aug. 13.	Arthur..... 111927	43	Toronto... ..	Schr.. Wood Sail	326	Fairhaven..... Quebec.	Dorans island.....	Stranded..... J. H. Peacock.	.....	Part.
Sept. 14.	Avon.....	30	Ogdensburg.....	Wood Steam	1147	Oswego..... "	3 miles W. of Lachine, lake St. Louis.	Stranded... .. J. Gallagher.	...	Part. \$5,000
Oct. 14.	A. McVittie.... 138491	27	Montreal....	Wood Steam	945.16	Montreal..... Oswego.	East of Refuge island. River St. Lawrence.	Stranded..... A. Lalonde.	.....	Part.
Oct. 28.	Aloha..... 134264	29	Midland.....	Schr.....	517	Kingston..... "	Simcoe island. Lt. lake Ontario.	Stranded.....	...	Part.
Dec. 22.	Alberta..... 122177	10	Port Arthur	Wood Steam	05	Port Arthur..... "	Thunder bay, lake Superior.	Foundered... .. Chs. Giroux.	.....	Total. Ship; \$1,500 Cargo; \$500 Slight.
May 19.	Byron Whitaker.. 134145	27	Montreal.....	Wood Steam	959	Erie, Pa..... Dalhousie, Ont.	Wicked bay, lake Ontario.	Stranded .....	.....
Oct. 7.	Bertie Calkins... 126127	42	Montreal.....	Fore & Wood Sail	248	Oswego..... "	Belleville, Ont... ..	Foundered... .. T. L. Vandresen.	.....	Total. \$1,000

May 1..	Case.....	28	Windsor, Ont. ....	.....	Wood Steam	1246-68	Sandwich, Ont.....	Lake Erie.....	Stranded..... W. W. Allen.	Total.
May 11.	Congercoal..... 126198	35	Toronto.....	.....	Wood Steam	333	Toronto Fairhaven.	Fairhaven	Burnt..... J. Lawrence.	Total. \$1,500
May 17..	Cadillac..... 138230	25	Montreal.....	.....	Steel Steam	732-20	Lorain, Ohio..... Montreal.	Island Perrot, lake St. Louis.	Stranded..... W. Beatty.	Slight.
July 14 .	Compton..... 130927	35	Montreal .....	.....	Wood Steam	936-76	Conneaut..... Chicoutimi.	Soulanges canal.....	Stranded	Part. \$5,500
Sept. 14..	City of Ottawa... 122018	36	Montreal .....	.....	Wood Steam	838	Hamilton..... Montreal.	Goose Neck island..	Stranded..... Capt. Baxter.	Slight.
June 15..	Fred Merner..... 120513	35	Ogdensburg.....	.....	Wood Steam	966	Fairhaven..... Rochester.	Lachine canal.....	Collided with bank... of canal. S. L. Beau.	Part.
Nov. 3..	F. H. Lemay... ..	16	Plattsburg, N.Y..	.....	Wood	91	New York ... Quebec.	Opposite Waya- gamac island, St. Lawrence river.	Foundered	Total.
Aug. 8..	Geo. A. Marsh... 133750	35	Toronto.....	.....	Wood Sail	220	Belleville .. Kingston.	Amherst island, lake Ontario.	Foundered..... J. W. S. Smith.	Total. \$5,000
Oct. 4.	George H. Jones . 130221	7	Owen Sound.....	.....	Tug..... Wood Steam	48-20	Owen Sound	Near Parry Sound..	Burnt	Total.
May 16..	Harry E. Packer.. 116815	35	Montreal.....	.....	Wood Steam	810-12	Quebec . Toledo.	Montreal harbour...	Collided with tow... E. C. Sears.	Slight.
May 23..	Harry E. Packer.. 116815	35	Montreal.....	.....	Wood Steam	810-12	Montreal..... Toledo.	Toledo harbour ..	Stranded..... E. C. Sears.	"
July 19.	Harry E. Packer.. 116815	35	Montreal .....	.....	Wood Steam	810-12	Toledo..... Quebec.	Welland canal... ..	Collided with un- known vessel. E. C. Sears.	Part.
Sept. 4..	Howard W..... 133821	17	Montreal .....	.....	Wood. Steam.	923-97	Montreal..... Lorain, Ohio.	Alexandria Bay nar- rows, St. Lawrence river.	Stranded..... H. Malette.	Part. \$7,000.
Sept. 14..	Harry E. Packer... 116815	35	" .....	.....	Wood. Steam.	810-12	Fairhaven..... Quebec.	Coteau lake, Ont ..	Stranded..... E. C. Sears.	Part. \$5,000.
Sept. 20..	Hiawatha..... 96904	27	" .....	.....	Wood. Steam.	518	Kingston..... Kingston.	8 miles off Yorksh- ire island, lake Ontario	Foundered.....	Total.
Nov. 27 ..	India..... 107735	18	" .....	.....	Wood & iron. Steam.	572-82	Port Colborne... Montreal.	Lachine canal.	Stranded..... J. A. Lepine.	Part. Ship: \$10,000. Cargo: \$20,000

STATEMENT of wrecks and casualties reported as having occurred to British, Canadian and Foreign vessels in Canadian waters and to Canadian vessels in other waters, from January 1 to December 31, 1917—*Concluded.*

INLAND WATER WRECKS—*Concluded.*

Date of Casualty.	Name of Ship. — Official Number.	Age of Ship	Registered Port.	How Rigged. Iron or Wood. Steam or Sail.	Register Tonnage.	Port Sailed From. Port Bound To.	Place Where Casualty Happened.	Particulars of Casualty. Name of Master.	Lives Lost.	Loss. Total or Partial.
May 9.	John Plankinton.	.....	(Grand Trunk Ferry.	.....	.....	Toledo. Hancock.	Detroit river, Canadian waters.	Collided with ferry <i>Detroit</i> and foundered.	.....	Total. Ship: \$80,000. Cargo: \$20,000. Part. \$3,500.
July 16.	James W. Follette 116816	36	Cobourg..	Wood. Steam.	590-08	Ogdensburg., Ashtabula.....	Welland canal	Stranded.. C. A. Maloney.	.....
Aug. 21.	James Reid..... 116398	42	Sarnia.....	Tug. Iron. Steam.	123	Sarnia..... Byng Inlet.	2 miles S½ E. of Byng inlet, Georgian bay.	Foundered..... R. T. Smith.	.....	Total.
Aug. 22.	John S. Thom 126388	27	Quebec.	Wood. Steam.	911-23	Ogdensburg.... Ashtabula.	½ mile N. E. of Devil's Nose, lake Ontario.	Damaged in gale.... W. J. Steele.	.....	Part.
May 8.	Keynor..... 133558	3	Newcastle ..	..... Steel. Steam.	1,090-14	Toledo Montreal.	4 miles above Lachine canal.	Stranded.. Jos. Martin.	.....	Part.
July 30.	Kildonian..... 92548	29	Montreal.....	Schr.. .. Wood. Sail.	499-06	Montreal..... Oswego.	2 miles W. of Brockville, river St. Lawrence.	Collided with <i>Stewart</i> W. D. Monette.	.....	Part. \$6,000.
Nov. 25.	Keynor	3	Newcastle ..	..... Steel. Steam.	1,090-14	Conneaut..... Montreal.	Off McGee's shoal, lake St. Francis.	Stranded..... Jos. Martin.	.....	Slight damage.
May 11.	Lloyd S. Porter... 94927	24	Montreal.....	..... Wood. Steam.	379-45	Montreal..... Fairhaven.	North Fairhaven, lake Ontario.	Burnt .....	.....	Total. \$20,000.
Nov. 3.	Lawrence C. Gift..	7	Albany, N. Y. .	..... Wood. Steam.	99	New York .. Quebec.	Opposite Wayagamac island, river St. Lawrence.	Foundered..... L. C. Gift.	.....	Total.
Dec. 5.	Lehigh..... 140424	37	.....	..... Iron. Steam.	1,035	Cleveland. Montreal.	Welland canal	Collided with stone pier. M. Peterson.	.....	Part. \$5,000.
Feb. 8.	Martha Stewart...	....	Toronto .....	..... Steel. Steam.	32	Toronto	Toronto harbour....	Foundered.....	.....	Part. \$1,000.

SESSIONAL PAPER No. 21

May 1..	Munroe C. Smith.. 93382	Oswego.....	..... Steel. Steam.	3,016 Fairport..... Buffalo.	Passage island, lake Superior.	Stranded.. E. Stanley.	Part. \$10,000.
May 15..	Magnolia..... 103690	Midland..	Wood. Steam.	190 Kingston.. Prescott.	Below Clayton, N.Y.	Stranded.. Robt. Graham.	Part.
July 9..	Manitoba..... 94878	Montreal.....	Steel. Steam.	1,699 Port McNicoll..... Owen Sound.	Off Whitefish point, lake Superior.	Collided with W. S. Mack.	Slight damage.
Aug. 13..	Middlesex.....	Chicago.....	Barge Wood.	587 Huron... Montreal.	Dorans island.....	Stranded..... J. McIntyre.	Part.
Oct. 27..	Mapleton..... 123926	Sunderland, Eng..	Steel. Steam.	1,140 Ashabula..... Québec.	Lake St. Louis.....	Stranded.. A. F. McLennan.	Part. \$1,000.
May 26..	Nepigon .. 130272	Buffalo.....	Wood. Steam.	548 Upward bound.....	Welland canal	Collided with gates of lock No. 1.	Part.
June 9..	Nepigon..... 130272	"	Wood. Steam.	548 Montreal..... Huron.	Weavers point.....	Stranded.. W. H. Brooks.	Part.
June 18..	Natironco..... 133746	Toronto.....	Steel. Steam.	543 Toledo.....	Detroit river.....	Collided with <i>Eastern States</i> .	Total.
Oct. 14..	Phoenix..... 111571	"	Barge Wood.	54	Peel island, Ont.....	Stranded.. J. P. McLeod	Part.
Aug. 31..	Rapids City .. 85525	"	Wood. Sail.	39 Bowmansville .. Toronto.	8 miles E.S.E. from Toronto, lake On- tario.	Foundered..... G. Arthurs.	Total. \$2,000.
Oct. 22..	Richard W.. 133832	Montreal.....	Wood. Steam.	904-53 Montreal .. Toledo.	Wolfe island, river St. Lawrence.	Stranded.. T. B. C. Raymond.	Part. \$2,000.
Nov. 16..	Rufus P. Ranney..	Fairport.....	Steel. Steam.	3,405 Buffalo. .. Depot Harbour.	Port Arthur.....	Collided with dock. C. N. Baker.	Part. \$1,500.

APPENDIX No. 9.

MASTERS AND SEAMEN'S BRANCH.

Report of B. F. BURNETT, Officer in Charge.

During the past fiscal year navigation schools were in operation at St. John, Halifax, North Sydney, Yarmouth, Quebec, and Kingston.

Marine lectures were delivered at Yarmouth, Collingwood, and Vancouver. The total expenditure on account of these services was \$4,814.

Examinations for Masters' and Mates' Certificates were held at Halifax, Yarmouth, North Sydney, St. John, Charlottetown, Quebec, Vancouver, Victoria, Prince Rupert, Edmonton, Nelson, Toronto, Collingwood, Port Arthur, and West Selkirk.

Issued during the year: 11 masters', 14 mates', 35 second mates', seagoing certificates of competency, 109 masters' and 101 mates' coasting certificates, 30 masters' and 34 mates' inland waters certificates of competency, and 39 mates' temporary certificates.

Fees paid, \$4,611.92; expenditure, \$13,589.12.

PILOTAGE.

The Minister of Marine and Fisheries is the pilotage authority in the pilotage districts of Montreal and Quebec, and all matters of pilotage in those districts are controlled by the minister through a general superintendent at Quebec.

In the pilotage district of Montreal there are fifty pilots and thirteen apprentices, and in the pilotage district of Quebec there are sixty-two pilots and twenty-one apprentices. Pilots in these two districts receive all their earnings, less 5 per cent in the Montreal district and 7 per cent in the Quebec district, which is paid into their respective Decayed Pilots' Fund. The total gross earnings of the Montreal pilots for the twelve months ended December 31, 1917, amounted to \$110,564.17, and the total gross earnings of the Quebec pilots during the same period amounted to \$115,561.99. All expenses of these services are paid out of public funds, and during the twelve months ended March 31, 1918, amounted to \$52,068.10.

Retired pilots of the Montreal and Quebec districts are regularly paid a yearly pension of \$300 each out of their respective Decayed Pilots Funds, and certain retired pilots of the Quebec district are paid in addition a yearly Government pension of \$300, those government pensions for the twelve months ended March 31, 1918, amounting to \$8,475.

Of the thirty-nine other pilotage authorities constituted under the authority of the Governor in Council in pursuance of the provisions of the Canada Shipping Act, fourteen have sent in returns for 1917.

SESSIONAL PAPER No. 21

APPENDIX No. 10.

SIGNAL STATION, CITADEL, HALIFAX, N.S.

Record of Shipping from April 1, 1917, to March 31, 1918, by W. W. DAVIS,
Captain, R.C.E., Superintendent of Signals:—

Total vessels reported.. . . .	2,712
“ arrived.. . . .	2,711
“ passed.. . . .	1

APPENDIX No. 11.

SABLE ISLAND.

Mr. J. U. Blakeney, superintendent, reports that parts of the buildings are very badly in need of repairs, and if not attended to soon will be gone past all repair.

Boats on hand as last year: some of them require the attention of a skilled carpenter.

Live stock: 35 horses, 55 horned cattle, 4 hogs.

People on the island: 46, including 5 at the wireless station.

Cattle killed: 5; 4 consumed on island; total weight, 2,850 pounds; one sent ashore.

Pigs killed: 7; total weight, 1,500 pounds.

Number of times rounds were made: A.M., 53; P.M., 32; total, 85.

Number of boat drills: 12.

Rocket drills: 8.

Crops normal.

APPENDIX-No. 12.

REPORTS OF AGENCIES.

The annual reports of the agents of this department are necessarily too voluminous for publication. Abstracts from these reports have accordingly been made.

HALIFAX AGENCY.

There has been a marked increase in the shipping of the port of Halifax during the last year, the arrivals numbering 2,711 as against 1,624 in 1916-17.

A small steamer to carry supplies to the Halifax lightship and neighboring light-stations, and for the placing and lifting of small buoys in various harbours, is needed.

During the fiscal year 1917-18 the following aids to navigation have been in operation: 258 lighthouses, 40 pole lights, 2 light vessels, 22 diaphones, 4 steam fog vessels, 57 hand horns, 6 mechanical fog bells, 23 combined gas and whistling buoys, 8 combined gas and bell buoys, 7 gas buoys, 17 automatic whistling buoys, 48 bell buoys, 3 submarine bells attached to buoys, 203 iron and steel buoys, 1,100 spar buoys, and 15 day beacons.

New aids to navigation have been established as follows: range lights at Bedford narrows, Halifax harbour; new fog alarm at Rockport; new wooden spar buoys, three at Advocate harbour, two in Inhabitants harbour, five in Little Lorembec, four in Bayside harbour, five in Port Clyde, two in Digby harbour, two in Barrington bay, one in Pennant bay, two gas buoys in Bedford narrows; one bell buoy at Petit-de-Grat island; one iron conical buoy in Halifax harbour; one automatic whistling buoy off Fourchu head.

Repairs and improvements were made to 32 lighthouses and fog alarm stations, 40 automatic and signal buoys, 18 automatic whistling buoys, and 44 bell buoys.

SYDNEY, N.S., SUB-AGENCY.

Arrangements were made for the opening of a free navigation school at Sydney. A new heater was installed in marine hospital at Louisburg, and bedding and supplies purchased.

Temporary lightkeepers were appointed at South bar and point Edward. Repairs were made to the heating system at Sydney marine hospital, and supplies bought.

Secured assistance of steamer *Stanley* in salving s.s. *Ennisbrooke* on shore, grain laden, for which the sum of \$2,000 was paid to the Government. Recovered harbour buoys carried away by ice with aid of steamer *Alert*. Recovered and returned to position outer range lights at Glace bay.

PICTOU, N.S., SUB-AGENCY.

Outside buoys repaired, painted and placed in position by ss. *Brant* early in May, taken up in December, and replaced by spar buoys. Dominion steamers calling were coaled and supplied. Submerged wreck in entrance to harbour lighted and buoyed until removed; 205 steamers and 490 sailing vessels arrived.

SESSIONAL PAPER No. 21

ST. JOHN AGENCY.

This agency maintains 152 lightstations, 16 fog alarm plants, 17 gas and whistling buoys, 8 automatic whistling buoys, 31 bell buoys, 67 can and conical buoys, and 50 spar buoys.

There are three signal stations, two in the bay of Fundy at Partridge and Brier islands, and one at Escuminac, Northumberland straits.

New range lights were established at Shemogue to be in operation in the spring.

The usual repairs were made to the *Lurcher* lightship, and the ship put in first-class condition, and buildings and sheds at all the stations were kept in repair and painted when necessary.

The Partridge Island station, St. John, signalled 104 steamers and 25 sailing vessels.

CHARLOTTETOWN AGENCY.

Part of the marine wharf has been closed to vehicular traffic as it is in bad condition. During the year warehouses Nos. 2 and 3 were sold by tender and removed from the wharf; the proceeds of the sale were sent to the Receiver General.

The C.G.S. *Brant* and the oyster culture steamer *Ostrea* wintered at the wharf.

The agency maintains 53 lightstations, 5 combined gas and whistling buoys, 4 Courtney whistling buoys and 4 American pattern bell buoys.

The revenue collected from 31 government wharves amounted to \$1,014.74, remitted \$766.73.

MONTREAL AGENCY.

New range lights were constructed at Cape Madeleine village. Gentilly back light, destroyed by fire in the spring of 1917, was rebuilt. The pier at Ile de Grace back light was further protected. The St. Sulpice course front light was moved to a new site. Electric lights were placed in the Vaudreuil wharf beacon. New apparatus was installed at Ash, and Bloody Island lights.

The buoys in the ship channels were maintained in first-class condition. The wrecked steamer *Glacial* was removed and placed in a position where she will no longer obstruct navigation.

EXPENDITURE.

Agencies, rents and contingencies..	\$14,795 31
Construction of lights..	29,887 68
Dominion steamers..	69,240 18
Construction buoy service..	1,812 48
Maintenance buoy service	40,558 58
Maintenance of lights..	19,348 85
Lightkeepers' salaries..	33,171 38
Wrecks..	503 02
Maintenance and repairs to wharves..	1,210 26
	<hr/>
	\$210,527 74

QUEBEC AGENCY.

This district extends from point Platon to Belle Isle, and includes the Saguenay river, lake St. John and Chaleur bay; the vessels under the immediate control of the agency are the ice breakers *Montcalm* and *Champlain*, the steamers *Druid*, *Eureka* and *Rouville*, and the lightships *Red Island* No. 3, *White Island* No. 5, *Prince Shoal* No. 7, and *Lower Traverse* No. 20, and for winter repairs and supplies the ice breaker *Lady Grey* and the steamers *Bellechasse* and *Princess*.

9 GEORGE V, A. 1919

This agency also attends to the requirements and administration of the ferry service between River Ouelle wharf and the north shore of the river St. Lawrence during winter and summer. The agency employs between 250 and 325 men.

Fifty wharves are under the control of the agency, the net revenue from which in 1917-18 amounted to \$6,391.42. The lighthouse, buoy, and fog alarm services were maintained as usual, except that owing to war conditions, the fog alarms were kept in operation somewhat longer; some of them on the Gaspé coast until late in January.

The total expenditure for the year, including all branches, amounted to \$945,724.41, an increase of \$146,733.70 over last year's expenditure.

DOMINION LIGHTHOUSE DEPOT, PRESCOTT, ONT.

About 265 production orders were completed by the machine shops during the year, these included the manufacture of Diamond Vapour Burner parts, the preparing of reflector apparatus, steel structural towers and oil pumping outfits, lighthouse stairs, railings, trap doors, etc.

In the vapour testing, assembling, and erecting department all vapour parts made up were carefully tested, and lights prepared for shipment and tested under running conditions. Erectors from this department were sent to various lighthouses to make repairs and set up new apparatus, and to instruct lightkeepers in the proper handling of their lights. In the carpenter shop the necessary repairs were made to government steamers, lighthouse and fog alarm buildings, etc. In the painting shop all necessary painting to buoy lanterns, Prescott division buoys, and the C.G.S. *Grenville* was done by the workmen. The blacksmith shop made all the necessary forgings, boats, bands, shackles, etc. for the various departments, plant, and government steamers; in the brass foundry a number of castings were made for lighthouse and fog alarm apparatus, gas buoy lanterns, etc.; a number of new patterns were made in the pattern shop.

The photometric room made tests of vapour burners in connection with catoptric and dioptric apparatus, also mantle lamps, mantles, petroleum oils, blaugas and pintsch gas.

FORT WILLIAM, ONT., SUB-AGENCY.

The usual work in connection with the lighthouse and buoy service was carried on during the season, on April 26 the lightkeepers were sent to Thunder cape, Welcome, Battle and Slate islands, and on May 2 the first boats left for the east, and the first vessel arrived; on December 14 the last vessel left Fort William harbour, and on December 17 all lightkeepers were removed from their stations.

KENORA, ONT., SUB-AGENCY.

The opening of navigation on the lake of the Woods in the spring of 1917 was unusually late, lightstations were manned and supplied as soon as the lake was clear of ice.

The buoy service has been much extended during the last four years, in 1915 Shoal lake was buoyed, and in 1916 and 1917 Rainy lake, and targets were erected in Sioux rapids, Manitou rapids, and on Singletons island, which have been of great benefit to navigation.

The Sand Hills channel at the mouth of the Rainy river is filling up from the north side, and in a year or two dredging will be necessary to keep the channel open.

SESSIONAL PAPER No. 21

VICTORIA, B.C., AGENCY.

A large reinforced concrete building for the storage of carbide and coal oil has been built at the wharf of the new depot, in order that this material may be carried in stock at headquarters; additional roads and extension of drainage system were other improvements.

The bridge at Ivory island which had been washed away was rebuilt with concrete piers and log stringers, standard day beacons on concrete bases were erected at Genoa bay, Mist rock and Bull rock, Turtle head, False reef, and Cook point. The maintenance branch supplied all the necessary stores to light and fog alarm stations, and attended to all necessary repairs and to the painting of buoys, beacons, buildings, etc.

PRINCE RUPERT, B.C., SUB-AGENCY.

Two new day beacons were built during the year at the entrance to Alice arm, Observatory inlet, one on Hyde rock, and one on the rock to the north of Brook island.

A new acetylene gas beacon was established off Knox point, Binnie island; all the sixteen acetylene beacons in the district and can, conical, spar, and platform buoys were maintained in good order throughout the season.

SESSIONAL PAPER No. 21

maintaining order, and protecting life and property between the Lachine canal and Sutherland pier, a distance of three and a half miles. No accident of even a minor nature occurred between these limits during the season of 1917 despite the free movement of railway and vehicular traffic. The services of eighteen of the harbour constables were continuously at the disposal of the various shipping companies during the season.

Railway Traffic Department.—During the year 1917, 215,294 cars were handled as compared with 234,439 in 1916. Directly to and from the sheds, 43,745 cars were handled as compared with 51,576 in 1916. This decrease is not due solely to the decline of overseas traffic but in part to the closing down of the hay compressing plant at shed No. 25 for practically the whole season, and reduction of traffic to and from certain industries previously occupied in the manufacture of munitions.

The length of the Harbour Commissioners' railway tracks at the end of 1917 was 52.347 miles, an increase of 3.235 miles over the number of miles in use at the end of 1916. No construction work or important improvements affecting railway traffic were completed during the year, with the exception of the completion of a mile of railway embankment eastward from section 75 in the neighbourhood of Longue Pointe church.

Engineering Department.—The Engineering Department of the Montreal Harbour Commission has charge of the work of harbour construction, maintenance, and operation; in order to keep abreast of the increasing trade of the port, the commission has acquired an extensive plant for all the construction work necessary, including dredging plant, tugs, derricks, and a shop for repairs, all of which are kept in first-class working order.

The following are the chief items of construction for the season: The continuation of the construction of New Victoria pier and Market basin. The continuation of the construction of bulkhead high level wharves on the river front, eastward from Victoria pier. General dredging for widening and deepening of basins and berths. Dredging of channels for the amelioration of St. Marys current. Paving and laying railway tracks on wharves. The continuation to completion of improvements resulting in the floating dock basin and site for the Canadian Vickers' shipbuilding and repair yard. The construction and improvement of harbour facilities such as hoists, flood gates, bridges, subways, and freight yards. Additions and improvements to Harbour Commissioners' construction plant. The completion of a market wharf for Montreal East. The erection of temporary offices for the United States Shipping Board, on Victoria pier. The erection of shed and brick fence at Harbour yard. The erection of offices in shed No. 2. The maintenance of berths and channels, of wharves, sheds, buildings, roadways, water service, cleaning of wharves and general repairs were carried on as usual. The improvement and extension of harbour railway terminals. Temporary sidings were constructed on the new Victoria pier. An industrial siding and trestle for the St. Lawrence sugar refinery. Improvements to track scale at Letourneux ave. An additional siding at the Harbour yard. New railway yard opposite dry dock. Double tracking of section from the dry dock to Racine pier. New yard and sidings at Longue Pointe.

GRAIN ELEVATOR SYSTEM.

This includes elevators, conveyor facilities, etc.; it was commenced in 1904 with an elevator having a capacity of 1,000,000 bushels, and in May, 1916, comprised two large elevators having a combined capacity of 6,662,000 bushels.

The operations of the elevators during the season of 1917 were marked by an increase of receipts by cars, whereas in 1916 75 per cent of the grain received at the elevators arrived by car, in 1917, 79 per cent arrived by car, 22,199 cars of grain were received during the season, and 2,159 cars were loaded and shipped out. The total number of bushels of grain handled by the Harbour Commissioners' elevator system during 1917 was 42,831,504, as against 51,548,720 in 1916.

9 GEORGE V, A. 1919

MONTREAL HARBOUR AS A SHIPBUILDING CENTRE.

Montreal harbour as a shipbuilding centre has the following permanent advantages:—

1. It is at the head of ocean navigation and the foot of the St. Lawrence Canal system.
2. It is the Canadian centre of finance and industry.
3. It has a splendid labour market.
4. It possesses manufacturing plants for all auxiliary parts required in shipbuilding and repair work.
5. The connection with the Harbour Commissioners port and railway terminals ensures prompt despatch and economy.

It is not unlikely that eventually shipyards will be established along the banks of the river between the Canadian Vickers plant and Pointe aux Trembles in a manner somewhat similar to the shipyards on the Clyde.

FINANCIAL STATEMENT.

For the year ended December 31, 1917, receipts on revenue account amounted to 1,850,646.93, an increase of \$36,773.99 over the previous year.

The cost of operation, and maintenance, interest, etc. was \$1,897,393.44, an increase over the previous year of \$120,010.77, leaving a debit on revenue account for the year of \$46,746.51. The interest charges which amounted to \$892,751.85 show an increase of \$14,394.28 on new loans due to the continued carrying out of improvement work. There were received from the Dominion Government loans of \$295,000 on account of capital expenditure for improvement work, and \$235,000 to retire public debentures which matured July 5, 1917.

Disbursements on capital account in 1917 amounted to \$422,003.44.

GENERAL.

His Excellency the Duke of Devonshire, Governor General of Canada, made a special visit to Montreal to inspect the port on October 10, a number of gentlemen actively interested in the port of Montreal were invited to accompany the inspection party, besides inspecting the harbour, an hour was spent at the plant of the Canadian Vickers, Limited, Maisonneuve.

On October 30, Lieut.-Col. C. C. Ballantyne, Minister of Marine and Fisheries, accompanied by Mr. Alexander Johnston, Deputy Minister, made an inspection of the harbour, and also of the plant of the Canadian Vickers, Limited.

On November 8, Hon. J. D. Hazen, ex-Minister of Marine and Fisheries, and now Chief Justice of New Brunswick, was the guest of the Harbour Commissioners.

THREE RIVERS HARBOUR COMMISSION.

As compared with 1916 the finances of the Commission show a decided improvement during the year 1917, the revenue from the harbour amounted to \$18,029.35, as against \$10,783.04 for 1916, an increase of \$7,246.31.

Shipyards have been established at Old Windmill point, where two ships each of 1,600 tons are being built and will soon be ready for launching.

The Canada Foundries Company have completed a wharf of 266 feet frontage adjoining their large workshop to permit of the export of their products and the obtaining of raw material by boat.

SESSIONAL PAPER No. 21

The Canada Steamship Lines Company placed part of its fleet in winter quarters in the St. Maurice river, and intend establishing workshops and shipyards on the south shore of the river for the construction and repair of boats for their fleet.

The Shawinigan Water and Power Company instead of having the electric transmission cables for their workshops on the south shore of the river and at Tetford Mines, laid in the bed of the harbour as formerly, have built on both shores two towers 375 feet in height for the installation of four cables. One of these towers is built on the north shore of the harbour and the other a few hundred feet distant from it. This will do away with an obstacle to ships anchoring in the harbour.

The wharf at cape Magdalen has been handed over to the Commissioners by the Department of Public Works, as this is within the harbour limits and has a population in its vicinity of about 2,000 souls, it will tend to contribute to the upkeep of the harbour.

In order to include the pulp works of the St. Maurice Paper Company which are at present just outside the harbour limits the Commission recommends that the charter of the harbour of Three Rivers should be amended to comprise within its limits the district of Three Rivers; the Commission further recommends that the Chairman and Commissioners should receive some indemnity for the time taken up in their meetings.

STATEMENT of number and tonnage of steamers and other vessels reported inward and outward of the port of Three Rivers, for the year 1917.

Ocean Traffic—Return of Vessels Inward.			Ocean Traffic—Return of Vessels Outward.		
Nationality.	No.	Tons.	Cleared for	No.	Tons.
British	19	62,634	Inland ports.....	17	56,468
			Great Britain.....	2	6,171
Total.....	19	62,634	Total.....	19	62,639
United States Traffic.			Inland Traffic.		
Canal boats.....	253	26,323	Schooners and barges	165	30,835
Sail barges.....	60	27,604	Tugs and steamboats.....	700	897,273
Total	313	53,927	Totals.....	865	928,108

RECAPITULATION.

Ocean traffic.....	19	62,634
United States traffic.....	313	53,927
Inland traffic.....	865	928,108
Grand total.....	1,197	1,044,674

MERCHANDISE.

Inward.		Outward.	
Soft coal.....	37,133 tons.	Rails	46,466 tons.
Hard coal... ..	18,070 "	Lumber.....	26,228,000 feet.
Sulphur... ..	4,599 "	Sand	31,500 tons.
Rosin.....	249 "	Pulpwood.....	11,717 cords.
Sand	1,756 "	Paper.....	3,757 tons.
Bricks.....	679,000	Laths.....	1,502,000 pieces.
Lumber	277,000 feet.	Hay.....	373 tons.
Pulpwood.....	785 cords.	Coal.....	45 tons.
Cordwood	409 "		
Hay	156 tons.		
Apples.....	1,746 bushes.		
Shingles.. ..	1,225,000 pieces.		

RECEIPTS AND DISBURSEMENTS FOR YEAR 1917.

Receipts.	Disbursements.
Tonnage dues... .. \$ 3,205 39	Current expenses \$ 1,467 02
Harbour dues: Inward. . . . 4,375 04	Salaries and commission.. .. 4,562 80
Harbour dues: Outward 7,198 16	Printing and stationery.. .. 150 00
Rent of wharves and moorage .. 3,050 76	Repairs and general harbour ex-
Commutation.... .. 200 00	penses.. .. 1,745 60
	Travelling expenses.... .. 3 50
	Interest on Debentures. . . . 9,525 00
Total receipts.. .. \$18,029 35	Total expenses on revenue.. \$17,454 70
Balance on December 31, 1916 .. 580 50	Deposits in bank, and cash on
	hand, December 31, 1917.. .. 1,155 15
	\$18,609 85

PICTOU HARBOUR COMMISSIONERS' REPORT.

STATEMENT of Harbour Dues for the year ending 31st December, 1917:—

Balance on hand December 31, 1916.. .. .	\$100 00
Collections of harbour dues for year 1917.. .. .	493 88
	\$593 88
Disbursements for 1917—	
Paid salary of harbour master	\$240 00
Paid harbour commissioners.. .. .	253 88
Balance on hand.. .. .	100 00
	\$593 88

E. & O. E.

Total tonnage for 1917, 32,925 tons.

Pictou Harbour Commissioners' Account for year ending December 31, 1917:—

1916.			
December	30,	By balance.. .. .	\$1,197 41
1917.			
December	31,	By harbour dues for year ending December 31, 1917, from Collector of Customs.. .. .	253 88
January	29,	To paid Mrs. W. A. Cooke, balance year's salary	
		W. A. Cooke, H. M.. .. .	\$ 40 00
April	19,	" H. B. Ross, secretary, half year	50 00
May	1,	" ss. <i>Hiawatha</i> putting out harbour buoys.	30 00
"	8,	" Wm. McLean, bushing channel.. .. .	12 00
		" E. C. McDonald, bushing E. River.. .. .	25 00
"	15,	" Jas. Carson & Son.. .. .	1 75
"	18,	" Gammon & Weir, repairs to wharf—	
		New Glasgow.. .. .	550 00
June	29,	" Phil. Hall, painting buoys.. .. .	8 50
November	8,	" E. C. McDonald, balance account.. .. .	5 00
"	9,	" Repairs to New Glasgow wharf.....	36 13
"	13,	" Alex. McMillan, work at wharf.	61 40
		" Ross Chapman, chain for buoy.. .. .	4 00
		" ss. <i>Hiawatha</i> , taking in buoys.. .. .	30 00

SESSIONAL PAPER No. 21

Pictou Harbour Commissioners' Account for year ending December 31, 1917:—*Con.*
1917.

December 30,	To paid H. B. Ross, secretary.. . . .	\$ 50 00	
	“ Walter Talbot, hire of scow and pile driver.. . . .	56 00	
	“ Wm. McLean, balance of account.. . . .	6 00	
	“ Captain D. McKenzie, replacing bushes, E. River.. . . .	5 00	
	“ J. W. McRoy, solicitor.. . . .	20 00	
	Balance.. . . .	460 81	
		<hr/>	
		\$1,451 29	\$1,451 29
		<hr/>	
	By balance.. . . .	\$460 81	
		<hr/>	

Pictou, N.S., December 31, 1917.

D. SUTHERLAND, *Chairman.*

REPORT OF BELLEVILLE HARBOUR COMMISSIONERS.

HARBOUR MASTER'S REPORT.

Imports—			
11,677 tons of coal.. . . .	\$1,167 70		
305 “ of merchandise.. . . .	30 50		
	<hr/>		\$1,198 20
Exports—			
1,352 tons of merchandise.. . . .	\$135 20		
764 “ of cheese.. . . .	76 40		
	<hr/>		211 60
Storage—			
To storage in warehouse.. . . .	120 00		
	<hr/>		\$1,529 80
Disbursements, sundry expenses.. . . .	167 20		
	<hr/>		\$1,362 60
			<hr/>

1917.

January 1.	To balance in bank.. . . .	\$ 323 99	
June 14.	To harbour dues.. . . .	67 70	
July 20.	“	67 30	
August 20.	“	274 60	
September 20.	“	276 20	
October 23.	“	437 30	
November 20.	“	188 00	
December 3.	“	51 50	
		<hr/>	\$1,686 59
March 21.	By auditor's fees.. . . .	\$ 5 00	
“ 31.	“ secretary's salary, 1916.. . . .	50 00	
May 10.	“ “ 1917.. . . .	50 00	
October 2.	“ interest on debentures.. . . .	600 00	
“ 30.	“ “ on overdraft.. . . .	0 50	
December 31.	“ harbour master's salary (13 months).. . . .	650 00	
	“ balance on deposit	331 09	
		<hr/>	\$1,686 59
		<hr/>	\$1,686 59

Statement of Sinking Fund to December 31, 1917:—

To credit of sinking fund as per statement of 1916.. . . .	\$7,223 54
December 31, 1917, to interest to date.. . . .	213 39
	<hr/>
	\$7,436 93
	<hr/>

TORONTO HARBOUR COMMISSION.

The harbour was closed from the 11th December to the 28th March, 107 days in all, two days less than last season; the first vessel to arrive was the *Macassa* from Hamilton on March 30, and the last tug the *Home Rule* on December 16; the arrivals numbered 2,168, 508 less than last year.

Amounts of harbour dues collected during the season were as follows:—

Merchandise,	74,002 tons at	3 cents..	..	..	..	..	..	..	..	\$2,220	06
Coal,	148,271	"	3	"	..	..	..	..	..	4,448	14
Stone,	8,873½	"	5	"	..	..	..	..	..	443	66
Fruit,	4,801	"	15	"	..	..	..	..	..	720	15
Lumber,	5,000 feet at	3	"	..	..	..	..	..	..	0	15
Horses, vehicles, etc.,	468 at 10 cents.	..	..	..	..	..	..	..	..	46	80
										<hr/>	
										\$7,878	
										<hr/>	
Total amount of harbour dues collected..										\$7,878	
" " collected, police court fines..										30	
" " " for storage...										416	
" " " " berthing vessels..										1,052	
										<hr/>	
										\$9,377	
										<hr/>	

Can buoys were placed round Lighthouse point on April 24, Long Branch July 27, Exhibition motor boats course August 30, Eastern channel August 1, Inner harbour June 13.

The lights on eastern entrance were lighted on March 30, Western channel on March 31, discontinued Eastern entrance December 25, Western channel December 25.

The vessels wintering at the port were:—

Steam barges..	..	..	..	..	..	..	..	..	..	..	17
" ships..	..	..	..	..	..	..	..	..	..	..	8
" ferries..	..	..	..	..	..	..	..	..	..	..	13
" tugs..	..	..	..	..	..	..	..	..	..	..	22
" yachts..	..	..	..	..	..	..	..	..	..	..	3
Sail..	..	..	..	..	..	..	..	..	..	..	3
Tow barges..	..	..	..	..	..	..	..	..	..	..	11
										<hr/>	
Total..										77	
										<hr/>	

With a gross tonnage of 44,107.

Dredging was carried on during the latter part of the season at the mouths of the city sewers, Elias Rogers coal docks, Imperial Oil Company, Weaver Coal Company, and approach to the corporation yards; owing to the early formation of ice in the harbour dredging operations had to be discontinued at several points.

Life chains were placed for the entire lengths of both the piers in the Western channel.

A storm signal mast was erected at the foot of Yonge street for the display of cautionary signals.

A white range light on the old Queens wharf, built in 1856, was destroyed by fire on September 1.

The schooner *Rapid City* was sunk off Scarboro bluffs on September 1; no loss of life.

The season from April 1 to December 10 (practically the close of navigation) was unusually free from storms on the Great Lakes, especially on lake Ontario, where the force of a gale was only reached on thirteen occasions; the heaviest gale of the season occurred on December 9.

The completion of the Quebec bridge over the St. Lawrence river on the 20th September, 1917, was of the utmost importance to the port of Quebec, as it places Quebec and district in direct communication by rail with the south shore of the St. Lawrence and with the United States, and makes it a distributing centre for a number of railways hitherto confined to the south shore; the docks and shipping facilities at Quebec can now be used to better advantage.

9 GEORGE V, A. 1919

CHIEF ENGINEER'S REPORT.

The new frontage on the quay wharf, river St. Charles, has been practically completed, the total frontage in the basin on the north side of the Louise embankment having a depth of 35 feet at low tide, is now 4,250 feet.

A new landing shed, 1,000 feet by 104 feet, on the north face of the Louise embankment will be completed in the early summer of 1918 with 1,000 feet of four-belt dock front grain loading galleries, two feeding two-belt galleries from grain elevator No. 2, and four travelling grain loaders, the contract for another fireproof landing shed 775 feet by 75 feet was awarded last June, the foundations have been completed, and erection of the steel work and installing of machinery will probably be finished during 1918.

A 1,000,000-bushel storage annex to the commissioners' elevator No. 2 has been completed, and a bagging outfit installed in connection with it.

Some 3,400 feet of permanent railway line for serving the north quay front were laid down, and 1,000 feet of track for carrying Gantry cranes.

The dredging consisted chiefly in the grading down to 35 feet at low tide of the basin to the north of the Louise embankment.

All properties of the commission were kept in good repair.

WHARFINGER'S REPORT.

The traffic in connection with the St. Charles locks and wharves was: inward, 323 vessels, 661,332 tons register; outward, 92 vessels, 333,859 tons register; lower port steamers, 96.

Damaged vessels using the dock during the season were: ss. *Korana*, collided with ss. *Royal Transport* off pier No. 1, repaired at shed No. 27, and proceeded to sea; the ss. *Royal Transport*, repaired at Levis dry dock and proceeded to Montreal; the ss. *Kelbergen*, in collision with ss. *Heathcote* off Cape Race, repaired at shed No. 27; the steam barge *Albert Y Gowen*, sunk in the basin, floated, and sent to Levis for repairs.

HARBOUR MASTER'S REPORT.

Port of Quebec—Record of Shipping Arrivals, 1917:—

	Number of Vessels.	Gross Tonnage.
Coasting vessels from seawards... ..tons.	142	120,983
“ “ Montreal and lake boats.. “	229	355,496
Ocean steamships—inwards.. .. “	152	961,133
“ “ —outwards from Montreal.. .. “	158	727,262
	<hr/> 681	<hr/> 2,164,874

The unusual large amount of tonnage from Montreal is due to government shipments.

As compared with the season of 1916, when the record was 592 ships—gross tonnage 2,081,198, there is an increase of 89 ships and 83,676 tons.

REVENUE AND EXPENDITURE.

The revenue of the Quebec Harbour Commission for the calendar year 1917 was \$267,812.68, as compared with \$282,327.46 for 1916, a decrease of \$14,514.78; the expenditure for 1917 was \$321,434.76, leaving a deficit on the year's operations of \$53,622.08.

SESSIONAL PAPER No. 21

APPENDIX No. 14.

PORT WARDENS' REPORTS FOR THE YEAR ENDING DECEMBER 31, 1917.

Returns have been received from sixteen port wardens, nine from Nova Scotia, one from New Brunswick, two from Quebec, and four from British Columbia.

The total amount of fees collected by port wardens was \$62,593.85.

A large number of both Canadian and American lake steamers passed out for ocean service before the close of navigation, which was on the 8th of December, 1917; but owing to the severity of the fall weather many lake vessels and overseas trawlers were obliged to winter at Montreal and ports between there and Quebec. The only serious casualty was that of the ss. *Scandinavian*, which struck bottom at Cap à la Roche.

The number of foreign-going steamers which reported at the Montreal Port Warden's office was 510, with total of 1,851,042 tons. The number which reported last year was 558 vessels with total of 1,926,929 tons, a decrease of 48 vessels and 75,887 tons.

Sixty vessels, with total of 44,258 tons, entered from lower ports, and 71 vessels, with a total of 131,736 tons, cleared for lower ports.

The amount of grain shipped was 35,313,955 bushels wheat, 15,062 bushels peas, 2,406,650 bushels barley, 18,126,478 bushels oats, 1,908,220 bushels corn and 344,281 bushels rye.

APPENDIX No. 15.

REPORTS OF SUBSIDIZED WRECKING COMPANIES.

QUEBEC SALVAGE AND WRECKING COMPANY.

Assistance was rendered to vessels as follows: March 19 to April 20, ss. *Carib* (American) towed from Murray bay to Quebec; April 23 to May 3, ss. *Benin* towed from Cape Gaspé to Montreal; May 15 to May 23, ss. *Cape Corso* towed from Cap Chat to Montreal; June 11 to 22, stood by ss. *Royal Transport* in collision until dry-docked; June 21 to July 9, floated ss. *Clematis* ashore off St. Esprit island, and towed her to Halifax; July 1 to 16, stood by ss. *Singapore*, ashore off Little Metis, until dry-docked at Montreal; July 16 to August 7, unsuccessfully tried to get off Norwegian steamer *Kristianiafjord*, ashore at Fresh Water point off cape Race; August 8 to August 29, towed ss. *Frankmere* off southeast point Bryon island and convoyed her to Halifax; August 29 to September 6, ss. *Ardgair* ashore off Amherst island, brought off and towed to Halifax; November 26, floated American steamer *Warleader* ashore off Grand Trunk wharf, Quebec; November 24 to December 5, supplied American steamer *Edmonton*, undergoing repairs, with two portable boilers.

BRITISH COLUMBIA SALVAGE COMPANY, LIMITED.

Salvage operations conducted as follows: April 1 to April 23, ss. *Prince Rupert* ashore at Gem island; August 27 to September 8, ss. *Cassiar* ashore at Trivett island; October 21 to 27, ss. *Gray* ashore at Safety cove; November 19 to 27, ss. *Mariposa* ashore at Straits island, Sumner strait; November 28 to December 19, ss. *Spokane* ashore at Idol point; March 10 to March 31, ss. *Admiral Evans* ashore Hawk's inlet, Alaska.

APPENDIX No. 16.

RETURNS OF SHIPPING MASTERS FOR THE YEAR ENDING DECEMBER 31, 1917.

NOTE.—The Collector of Customs acts as shipping master where no other shipping master is appointed.

Province.	Seamen Shipped.	Seamen Discharged.	Amount.
			\$ cts.
Quebec.....	2,971	2,052	2,740 30
New Brunswick.....	817	332	532 50
Nova Scotia.....	7,691	6,537	5,977 70
Prince Edward Island.....	66	44	44 40
British Columbia.....	5,453	5,180	4,311 50
Total...	16,998	14,145	13,606 40

LIST OF VESSELS

LISTE DES NAVIRES

